

Rocky Flats Environmental Technology Site



MAN-071-IWCP

REVISION 0

INTEGRATED WORK CONTROL PROGRAM MANUAL

APPROVED BY: /s/ D. G. Ruscitto /
 Chief Engineer, Print Name Date
 Kaiser-Hill Company, LLC

Responsible Organization: SS&E Effective Date: 9/15/98

CONCURRENCE BY THE FOLLOWING DISCIPLINES IS DOCUMENTED IN THE PROCEDURE HISTORY FILE:

K-H Safeguards, Security, Site Operations & Integration
 K-H Environmental Management & Compliance
 K-H Safety Systems & Engineering
 K-H Closure Projects
 K-H Nuclear Operations
 Wackenhut Services, LLC
 DynCorp of Colorado, Inc.
 Safe Sites of Colorado
 Rocky Mountain Remediation Services

USE CATEGORY 4

USQD Program Review: SES-RFP-98.1174-ARS

IRC review: SORC-98-022

Reviewed for Classification/UCNI

The following have been incorporated in this revision:

By /s/

This is a new manual.

This manual supersedes the procedure/s on page 2.

Periodic review frequency: 3 years from the effective date.

CONTROLLED DOCUMENT
 (If numbered in red ink-black numbering
 indicates information only copy)

814
 Copy Number

PADC-98-00759

ADMIN RECORD

SW-SW-A-03001

		LIST OF EFFECTIVE PAGES			
PAGES	EFFECTIVE DATE	PAGES	EFFECTIVE DATE	PAGES	EFFECTIVE DATE
1	9/15/98	72	9/16/98		
2	12/15/98	73-79	9/15/98		
3-4	11/9/98	80-82	9/16/98		
5-6	9/16/98	83-85	9/15/98		
7	9/15/98	86-94	9/16/98		
8-9	9/16/98	95	9/15/98		
10	9/15/98	96-100	9/16/98		
11	9/16/98	101-107	9/15/98		
12-13	9/15/98	108-110	9/16/98		
14	9/16/98	111-112	9/15/98		
15-16	9/15/98	113-116	9/16/98		
17-18	9/16/98	117-118	9/15/98		
19-23	9/15/98	119-120	9/16/98		
24	9/16/98	121-122	9/15/98		
25	9/15/98	123-124	9/16/98		
26-	9/16/98	125-126	9/15/98		
27	9/15/98	127	9/16/98		
28-36	9/16/98	128-132	9/15/98		
37	9/15/98	133	9/16/98		
38	9/16/98	134	9/15/98		
39-40	9/15/98	135-136	9/16/98		
41-45	9/16/98	137-138	9/15/98		
46	9/15/98	139-188	11/9/98		
47-50	9/16/98				
51	9/15/98				
52-55	9/16/98				
56-58	9/15/98				
59-62	9/16/98				
63	9/15/98				
64-	9/16/98				
65-71	9/15/98				



The following DCFs are active for this manual:

DCF#: CHG-1
DCF#: CHG-2
DCF#: CHG-3

The following procedure/s have been superceded by this manual:

- PRO-R32-ADM-02.38
- 1-U39-ADM-02.40
- 1-D55-ADM-02.37
- 3-PRO-207-SSOC-JHA
- 1-E31-IWCP-GLOSSARY
- 1-74000-IWCP-2
- 1-74000-IWCP-4
- 1-74000-IWCP-6
- 1-E32-IWCP-1
- 2-E94-MP&S-001
- 1-E33-IWCP-3
- 1-E34-IWCP-5
- 1-G74-IWCP-7
- 1-N99-IWCP-9

CHG-3

TABLE OF CONTENTS

CHAPTER 1 - INTEGRATED WORK CONTROL PROGRAM OVERVIEW.....	5
1.0 PURPOSE.....	5
3.0 APPLICABILITY AND USE	5
4.0 BACKGROUND	6
5.0 GENERAL RESPONSIBILITIES.....	8
6.0 CHAPTER SUMMARY.....	8
7.0 RECORDS.....	10
APPENDIX 1.1 - FLOW CHARTS	11
APPENDIX 1.2 - REQUIREMENTS.....	14
APPENDIX 1.3 - TRAINING GUIDELINES	20
CHAPTER 2 - WORK INITIATION & SCREENING.....	23
1.0 PURPOSE.....	23
2.0 SCOPE.....	23
3.0 APPLICABILITY	23
5.0 INSTRUCTIONS	28
APPENDIX 2.1 - WORK CONTROL FORM	34
APPENDIX 2.2 - ACTIVITY SCREENING FORM.....	36
APPENDIX 2.3 - GUIDANCE FOR SELECTION OF WORK PLANNING LEVELS	42
CHAPTER 3 - WORK PLANNING & HAZARD ANALYSIS PROCESS.....	47
1.0 PURPOSE.....	47
2.0 OVERVIEW.....	47
3.0 GRADED WORK PLANNING PROCESS INSTRUCTIONS.....	47
4.0 PLANNING TEAM MAKEUP AND MEMBER QUALIFICATIONS.....	49
APPENDIX 3.1 - PLANNING LEVEL INSTRUCTIONS.....	53
APPENDIX 3.2 - JOB HAZARD ANALYSIS CHECKLIST.....	59
APPENDIX 3.3 - INSTRUCTIONS FOR COMPLETING JHA WORKSHEET.....	65
APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE.....	66
APPENDIX 3.4 - TEAM CREDENTIALS REPORT FORM AND INSTRUCTIONS	79
APPENDIX 3.5 - INTEGRATED HAZARD ASSESSMENT GUIDELINES.....	81
CHAPTER 4 - WORK PACKAGE - TYPE 1 PROCESS.....	91
1.0 PURPOSE.....	91
2.0 SCOPE.....	91
3.0 INSTRUCTIONS	93
APPENDIX 4.1 - WORK PACKAGE COVER SHEET.....	102
APPENDIX 4.2 - STANDARD WORK PACKAGE COVER SHEET	103
APPENDIX 4.3 - WORK PACKAGE CHANGE LOG.....	105
APPENDIX 4.4 - WORK PACKAGE REVISION REQUEST	106
APPENDIX 4.5 - BILL OF MATERIAL (BOM) PROCESSING INSTRUCTIONS.....	108
CHAPTER 5 - WORK PACKAGE - TYPE 2 PROCESS.....	113
1.0 PURPOSE.....	113
2.0 OVERVIEW.....	113
3.0 INSTRUCTIONS	114
APPENDIX 5.1 - WORK PACKAGE COVER SHEET.....	118
CHAPTER 6 - WORK PACKAGE - TYPE 3 PROCESS.....	119
1.0 PURPOSE.....	119
2.0 SCOPE.....	119
3.0 APPLICABILITY	120
4.0 CONSTRUCTION PROJECT MANAGEMENT OVERVIEW.....	120
5.0 INSTRUCTIONS	123
APPENDIX 6.1 - ORGANIZATION OF CSI DOCUMENTS	129
APPENDIX 6.2 - USER REQUIREMENT DOCUMENT	131
CHAPTER 7 - TECHNICAL PROCEDURES	135
1.0 PURPOSE.....	135

2.0	DISCUSSION.....	135
3.0	INSTRUCTIONS	135
CHAPTER 8 - PREVENTIVE MAINTENANCE		139
1.0	PURPOSE.....	139
2.0	DISCUSSION.....	139
3.0	INSTRUCTIONS	139
	APPENDIX 8.1 - PREVENTIVE MAINTENANCE WORK PACKAGE COVER SHEET	143
	APPENDIX 8.2 - PREVENTIVE MAINTENANCE WORK PACKAGE FORMAT	144
	APPENDIX 8.3 - PREVENTIVE MAINTENANCE CHANGE REQUEST	148
CHAPTER 9 - MINOR MAINTENANCE		151
1.0	PURPOSE.....	151
2.0	DISCUSSION.....	151
3.0	INSTRUCTIONS	151
	APPENDIX 9.1 - MINOR MAINTENANCE WORK ACTIVITY DESCRIPTION	153
	APPENDIX 9.2 - MINOR MAINTENANCE HAZARDS ANALYSIS MATRIX	155
	APPENDIX 9.3 - MINOR MAINTENANCE DOCUMENTATION REPORT	158
CHAPTER 10 - EMERGENCY WORK		161
1.0	PURPOSE.....	161
2.0	DISCUSSION.....	161
3.0	INSTRUCTIONS	161
	APPENDIX 10.1 - EMERGENCY ACTION WORK LOG & INSTRUCTIONS.....	163
CHAPTER 11 - POST JOB REVIEWS & FEEDBACK.....		169
1.0	PURPOSE.....	169
2.0	DISCUSSION.....	169
3.0	INSTRUCTIONS	169
3.2	REFERENCE LIBRARY	170
3.3	CORRECTIVE ACTION PROGRAM (CAP).....	170
	APPENDIX 11.1 - POST JOB REVIEW CHECKLIST & INSTRUCTIONS.....	171
CHAPTER 12 - GLOSSARY.....		175
1.0	PURPOSE.....	175
2.0	TERMS & DEFINITIONS	175
	REFERENCES	185
	ACRONYMS.....	186

DOCUMENT CHANGE FORM (DCF)

⑦ DCF #: CHG-3

① DCF Originator: Dennis Morris [Signature] 12/2/98
Print Sign DateOrganization: SMI/K-H EngineeringPhone/Pager/Location: x7259 Bldg 130② Responsible David Harrah [Signature] 12/2/98
Manager: Print Sign DateOrganization: K-H Engineering IWCP Program ManagerPhone/Pager/Location: x3030/ Bldg 130③ Assigned SME: Steven Little [Signature] 12/2/98
Print Sign DatePhone/Pager/Location: x2376/212-4557/Bldg 750⑧ Prescreen/SES/USQD Number: Not RequiredIndependent Safety Review: Not Required④ Integrated Work Control Program Manual
Document TitleMAN-071-IWCP Revision 0
Existing Document Number and Revision

New Document Number and Revision (if Applicable)

⑤ Type of Document

- ☐ Policy ☐ Directive ☒ Manual ☐ Technical Standard
☐ Procedure ☐ Instruction ☐ Job Aid ☐ Other

⑥ Type of Modification

- ☐ New ☒ Change
☐ One Time Use Only ☐ Editorial
☐ Revision ☐ Intent
☐ Cancellation ☒ Non-Intent

⑨ Effective Date: 12/15/98

Expiration Date: _____

⑩ ⑪ ⑫ ⑬

Item	Page	Step
1	2	

Proposed Modification

Add following list of procedure/s that have been superceded by this manual:
3-PRO-207-SSOC-JHA, 771/774 Job Hazard Analysis Procedure
1-E31-IWCP-GLOSSARY, Glossary
1-74000-IWCP-2, Maintenance Action Center
1-74000-IWCP-4, Logistics and Material Control
1-74000-IWCP-6, Maintenance Emergency Priority Work
1-E32-IWCP-1, Work Control Form Processing
2-E94-MP&S-001, Maintenance Work Package Planning Guide
1-E33-IWCP-3, Maintenance Work Package Planning Process
1-E36-IWCP-5, Conduct of Maintenance Work
1-G74-IWCP-7, Preventive Maintenance Work
1-N99-IWCP-9, Environmental Restoration & Waste Packaging Planning Process

⑭

⑩ Item

Justification

1. 90 day grace period for full implementation of this IWCP manual has expired, thereby superceding the listed documents.

⑮ Reviewing Organization	⑮ Name of Reviewer	⑮ Date	⑮ Reviewing Organization	⑮ Name of Reviewer	⑮ Date
N/A					

⑮ Approval Authority: David Ruscitto 12/3/98
Print David Ruscitto, K-H Chief Engineer Sign Date

DOCUMENT CHANGE FORM (DCF)

⑦
DCF #: CHG-2

①
DCF Originator: S. K. Little [Signature] 11/6/98
Print Sign Date

Organization: SSOC Nuclear Operations

Phone/Pager/Location: 2376 / 212-4557 / Bldg 750

②
Responsible D. P. Harrahy [Signature] 11/6/98
Manager: Print Sign Date

Organization: K-H SS&E

Phone/Pager/Location: 3030 / 212-6461 / Bldg 130

③
Assigned SME: S. K. Little [Signature] 11/6/98
Print Sign Date

Phone/Pager/Location: 2376 / 212-4557 / Bldg 750

⑧
Prescreen/SES/USQD Number: Not Required

Independent Safety Review: Not Required

④
Integrated Work Control Program Manual
Document Title

MAN-071-IWCP, Rev 0
Existing Document Number and Revision

N/A
New Document Number and Revision (if Applicable)

⑤
Type of Document

☐ Policy ☐ Directive ☒ Manual ☐ Technical Standard

☐ Procedure ☐ Instruction ☐ Job Aid ☐ Other

⑥
Type of Modification

☐ New ☐ One Time Use Only ☒ Change

☐ Revision ☐ Editorial

☐ Cancellation ☒ Intent ☒ Non-Intent

⑨
Effective Date: 11/9/98 Expiration Date: _____

⑩		⑪	⑫	⑬
Item	Page	Step	Proposed Modification	
1	2-4		Inserted new LOP and TOC due to page changes.	
2	139	3.1	Added clarification about performance of Job Hazard Analysis during PMWP development phase.	
3	140-141	3.3	Added clarification about performance of Job Hazard Analysis during Work Execution phase.	
4	141	3.3	Corrected typographical error.	
5	145	[7]	Corrected typographical error and deleted step for JHA.	

⑩	⑭
Item	Justification
Changes listed correct typographical errors and clarify performance of Job Hazard Analyses for Preventive Maintenance in Chapter 8.	

⑮	⑯	⑰	⑮	⑯	⑰
Reviewing Organization	Name of Reviewer	Date	Reviewing Organization	Name of Reviewer	Date
N/A					

⑱
Approval Authority: D RUSCITTO [Signature] 11-6-98
Print Sign Date

① F Originator: Dennis Morris 9/15/98
Print Sign Date

Organization: SMI/K-H Engineering

Phone/Pager/Location: x6867 Bldg 130

② Responsible David Harrah 9/15/98
Manager: Print Sign Date

Organization: K-H Engineering IWCP Program Manager

Phone/Pager/Location: x3030/Bldg 130

③ Assigned SME: Steven Little 9/15/98
Print Sign Date

Phone/Pager/Location: x2376/212-4557/Bldg 750

④ Prescreen/SES/USQD Number: Not Required

Independent Safety Review: Not Required

④ Integrated Work Control Program Manual
Document Title

MAN-071-IWCP Revision 0
Existing Document Number and Revision

New Document Number and Revision (if Applicable)

⑤ Type of Document

☐ Policy ☐ Directive ☒ Manual ☐ Technical Standard
☐ Procedure ☐ Instruction ☐ Job Aid ☐ Other

⑥ Type of Modification

☐ New ☐ One Time Use Only ☒ Change
☐ Editorial
☐ Revision ☐ Intent
☐ Cancellation ☒ Non-Intent

⑦ Effective Date: 9/15/98 Expiration Date: 9/16/98

⑩ Item	⑪ Page	⑫ Step	⑬ Proposed Modification
2	5		Clarify Applicability and Use requirements for IWCP Manual
3	11		Modify IWCP Flowchart to reflect reordered WCF steps
4	28-31		Reorder WCF Sections to have Shift Manager Review moved before Responsible Manager Evaluation and Davis-Bacon Determination before minor maintenance
5	30		Clarify minor maintenance criteria as reflected in updated WCF
6	32		Correct typographical error Sec 5.2.3, 10 th bullet to read 15 +/- 3 points
7	33		Clarify completed ASF document retention guidelines to include retention with work document or work document history files
8	34-35		Reorder WCF: move Shift Manager Review before Responsible Manager Evaluation to include addition of comment lines; clarify minor maintenance criteria; and move Davis-Bacon determination before minor maintenance
9	41		Correct typographical error in note section of ASF to read 15 +/- 3 points
10	48		Clarify guidelines for use of Table 3-1
11	49		Correct Table 3-1 to reflect appropriate planning process elements
12	52		Clarify documentation guidelines for "dissenting opinions"

⑭ Item Justification
Changes listed correct typographical errors, clarify wording and re-sequence selected paragraphs for improved readability/usability.

⑮ Reviewing Organization	⑯ Name of Reviewer	⑰ Date	⑮ Reviewing Organization	⑯ Name of Reviewer	⑰ Date
N/A					

Approval Authority: David Ruscitto
Print David Ruscitto, K-H Chief Engineer Sign

9-16-98
Date

(4)

Integrated Work Control Program Manual
Document Title

(5)

MAN-071-IWCP Revision 0
Existing Document Number and Revision

(10) (11) (12) (13)

Item	Page	Step	Proposed Modification
12	53		Correct 4 th and 7 th paragraphs to make proper reference to Appendix 3.2
13	54		Correct last paragraph, third line to make proper reference to Table A3-1
14	55		Delete reference in 5 th paragraph to steps [1] and [2] which are not listed
15	59-62		Correct typographical error in Appendix 3.2 JHA Checklist for all "M"s to read "R" and omitted requirements
16	64		Correct 5 th Note and last bullet to make proper reference to Appendix 3.3, and clarified wording in 1 st Note
17	80		Correct 2 nd bullet to make proper reference to Appendix 3.2 and clarified wording
18	82		Correct last paragraph to make proper reference to Table A3-3
19	91		Delete word "maintenance" from 1 st paragraph, 1 st line Sec. 2.0
20	92		Change Roman numeral I to Arabic 1 in Figure 4-1
21	17		Correct typographical error to read "be"
22	96		Insert words, "As required", prior to "The Planner SHALL" in 3.2.7, Section 7
23	98		Clarify final bullet in 3.2.11 to reference High Planning Level tables and forms per Chapter 3
24	113		Delete all after Type 2 WP, in Section 1.0
25	113		Change Roman numeral II to Arabic 2 in Figure 5-1
26	119		Change Roman numeral III to Arabic 3 and correct to read Type 3 in Figure 6-1
27	135		Correct 4 th paragraph, Sec. 3.1 to make proper reference to Chapter 3
28	136		Clarify last sentence of Sec 3.4 to read "...perform a PJR in accordance with the requirements stated in Chapter 11"; clarify Sec 3.2 to include "remedial/required"; correct Sec 3.3 1 st paragraph to read "Required in the JHA"; add USQD following SES in 3 rd paragraph, and correct typographical error
29	139		Correct Sec. 3.1 to make proper reference to Appendix 8.2, and second paragraph Sec 3.2 to reference Chapter 3
30	149		Delete all after "minor maintenance" in Sec. 1.0,
31	149		Correct typographical and reference errors in Sec 3.1
32	150		Clarify Sec 3.3, work instructions for performing minor maintenance and last paragraph to read "...perform a PJR in accordance with the requirements stated in Chapter 11"
33	151		Clarify Appendix 9.1 last sentence in introductory statement, and correct to make proper reference to Chapter 2
34	151		Delete "equivalent item replacement, as applicable to non-safety systems/equipment" in R02
35	156		Correct typographical error to read "JTB Performed" in Appendix 9.3 Minor Maintenance Documentation Report
36	159		Delete all after "Appendix 10.1" in Sec 3.2 last paragraph
37	160		Insert new bullet: "Initiate WCF and obtain work control number" at beginning of Sec 3.3, Job Supervisor requirements
38	24		Insert "in accordance with 1-W36-APR-111, Acquisition Procedure for Requisitioning Commodities and Services", at the end of last paragraph/sentence in Sec 3.0, and corrected typographical error combining 1 st two routine repair bullets
39	6		Correct typographical error in Sec 4.0 to read Figure 1-1
40	26		Revise Figure 2-1 to add a "Do Work" box
41	36	2	Correct typographical error in question 2 to read "...and do approved work controls..."
42	38	22	Correct typographical error in question 22 to read "...Preble's"
43	72	38	Clarify concrete penetration guideline to include "Review facility drawings, conduct visual inspections, and utility locate or identify the steps in WP that specify activities/equipment involved, potential hazards and protective measures. All power tools or equipment (electric and pneumatic) used shall be grounded or of the "double insulated" type. Approved rubber insulating gloves and mats shall be used (gloves and mats used must be approved for the maximum potential voltage) HSP 15.00."
44	99		Clarify last paragraph of Sec 3.4 to read "...perform a PJR in accordance with the requirements stated in Chapter 11"
45	116		Clarify last paragraph of Sec 3.4 to read "...perform a PJR in accordance with the requirements stated in Chapter 11"
46	169		Revise Appendix 11.1 to read "Work Document Number", and "Title" in checklist header
47	184		Correct typographical error in Acronym list to read "HASP"
			(14)
Item		Justification	

Changes listed correct typographical errors, clarify wording and re-sequence selected paragraphs for improved readability/usability.

(4)

Integrated Work Control Program Manual

Document Title

(5)

1-MAN-071-IWCP Revision 0

Existing Document Number and Revision

(9)

(11)

(12)

(13)

Item	Page	Step	Proposed Modification
48			Corrected usage of "may" throughout document
49			Corrected usage of "Should" throughout document
50	9		Corrected typographical error reference to Site Engineering Requirements Manual
51	18		Corrected typographical error reference to Nuclear Safety Manual
52	64		Correct 1 st bullet to read "The SMEs identified on the JHA checklist as "Required"..."
53	98		Correct Sec 3.3 5 th bullet to read "...the organizations designated as "Required"..."
54	113		Correct Sec 3.3 1 st paragraph to read "...the organizations designated as "Required"..."
55	139		Correct Sec 3.2 5 th paragraph to read "...the organizations designated as "Required"..."
56	183		Added Nuclear Safety Manual to Reference List
57	185		Added document number to Nuclear Safety Manual, 1-MAN-018-NSM

(14)

Item	Justification

CHAPTER 1 - INTEGRATED WORK CONTROL PROGRAM OVERVIEW

1.0 PURPOSE

This manual establishes requirements and process controls for the Integrated Work Control Program (IWCP) at the Rocky Flats Environmental Technology Site (Site).

2.0 SCOPE

The IWCP implements Integrated Safety Management (ISM) and provides detailed guidance on how the five steps of ISM are to be conducted at Rocky Flats. This manual:

- Identifies the specific regulatory requirements for work activities (other programs such as Safety & Industrial Hygiene and Nuclear Safety have requirements that must be integrated into the process controls of this manual, but these are not duplicated in this manual)
- Provides a chapter summary for selection of the proper tools depending on the work activity work scope
- Describes methods and controls to identify an activity
- Describes methods and controls to screen an activity or project for the purpose of identifying the proper level of planning
- Describes methods and the controls for the selected planning method to identify the hazards, develop the specific activity controls, and implement the specific activity controls
- Describes methods and the controls to select and use the appropriate vehicle for establishing the work implementing methodology
- Describes methods and the controls for developing operations and technical activity procedures
- Describes methods and controls to perform preventive maintenance operations, emergency work, and minor maintenance
- Provides a mechanism for feedback to ensure continuous improvement through the use of a Post Job Review (PJR)

3.0 APPLICABILITY AND USE

This manual identifies mandatory elements and requirements by using the word "**SHALL**". Any deviations from **SHALL** statements require prior written approval from the Kaiser-Hill (K-H) IWCP Program Manager. Additionally, the manual uses the word "**Should**" to indicate a recommendation that is based on standards and good business practices. The word "**may**" is used when permission is granted rather than constituted as requirement.

This manual applies to all Site employees and subcontractors performing or supporting onsite work. The requirements of this manual **SHALL** be used for all planning activities begun after the effective date of this manual. For those work activities whose planning was started prior to the effective date of this manual, the planning **may** be completed under the existing IWCP process. However, if the execution of those activities planned under the existing IWCP has not begun within 90 days, or has been delayed 90 days beyond the effective date of this manual, the RM **SHALL** re-screen the activity against the criteria of this IWCP manual (using the Activity Screening Form – Appendix 2.2) and make any necessary planning changes in accordance with the requirements of this manual.

Any exceptions from the requirements of this manual must be granted in writing by the IWCP Program Manager.

A list of acronyms and abbreviations is included in the Glossary.

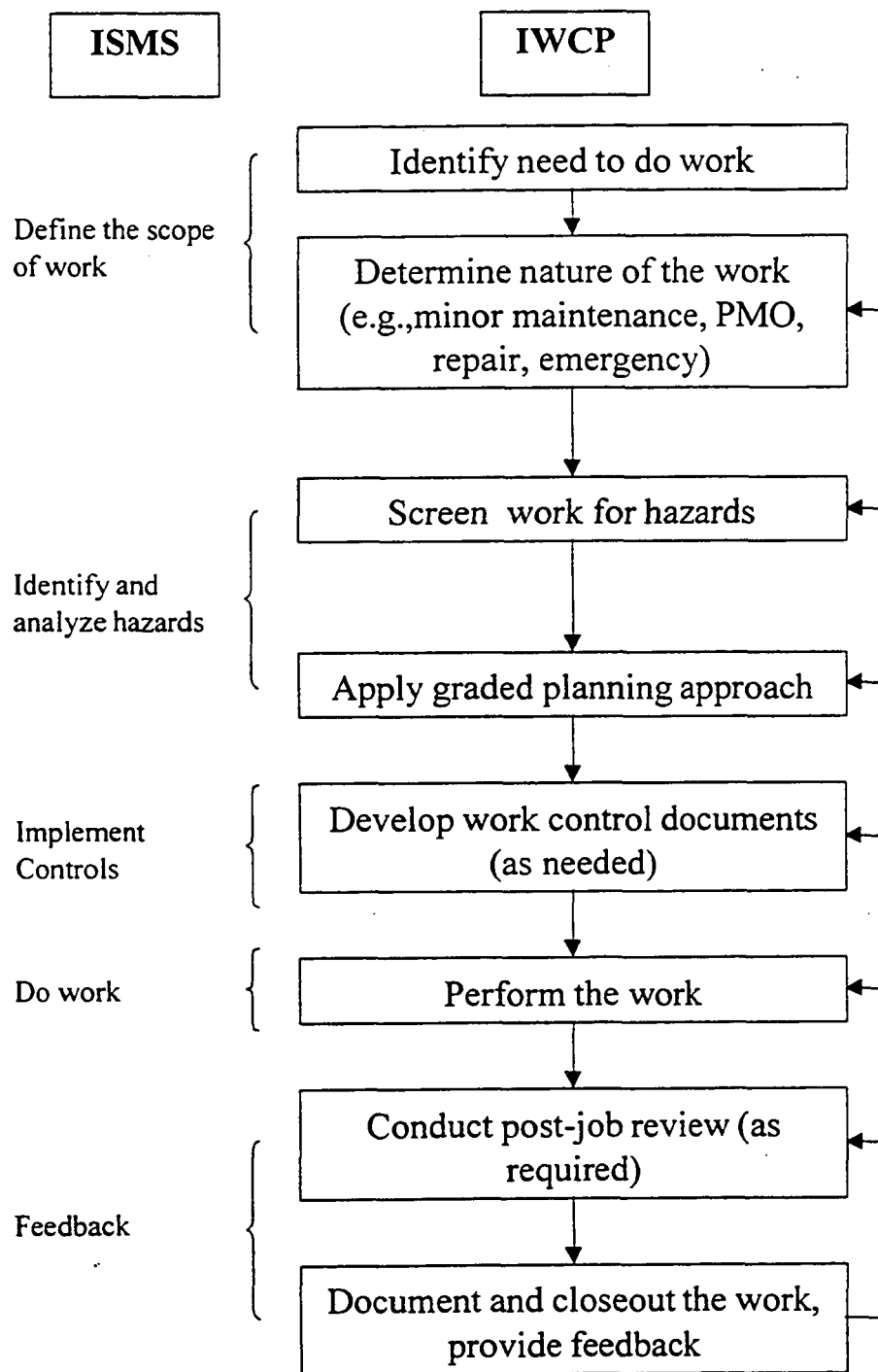
4.0 BACKGROUND

The IWCP is the method by which ISM is implemented on the job. It provides a single process through which all work on the Site is performed. It ensures that the work is screened consistently to uniform criteria and that hazards are appropriately analyzed and controlled. Figure 1-1 pictorially demonstrates the relationship between the ISM and IWCP.

CHG-1

Figure 1-1

IWCP/ISMS Process Overview



5.0 GENERAL RESPONSIBILITIES

General responsibilities with respect to the IWCP are given below. Specific responsibilities are provided in individual chapters.

5.1 Senior Line Management

Ensure that line managers under their responsibility are trained to use this manual and that they use this manual for all work in their area of responsibility.

Conduct oversight activities to ensure IWCP is safely and effectively implemented.

5.2 Responsible Line Manager

Use this manual for planning and performance of all work under their responsibility.

Ensure that support staff and subordinate managers, supervisors and workers implement the results of the screens and choices made using this manual.

Ensure that teams, when required, are made up of the properly qualified safety personnel, craftsmen, engineers and subject matter experts.

5.3 Project Managers, Planners, Engineers and Support Staff

Implement the decisions made by the use of this manual in the execution of planning, analysis, procedure writing, work package generation, and development of drawings and specifications.

5.4 Safety & Program Subject Matter Experts (SMEs) and Floor-Level Workers

Provide input into the work document planning and development process to produce a work control document (WCD) that implements the elements of ISM, while also ensuring efficiency and workability.

5.5 All Employees

Identify Site deficiencies as a routine element of their normal activities.

6.0 CHAPTER SUMMARY

This section provides a synopsis of the uses for each of the succeeding chapters. This Manual is not intended to be a sequential flow document starting at Chapter 2 and proceeding through the Manual. Users **SHALL** refer to Appendix 1.1, "Flow Charts", as well as the instructions below for the overall Site work processes. Each work activity under the control of this Manual involves differing circumstances where a chapter can be used first in one instance, and a different chapter used first in another. The overview provided by this chapter is intended to:

- Provide the user with a general understanding of all the chapters
- Show how Site work is implemented from identification of a work activity to work closeout
- Provide an overview to show that all ISM requirements have been addressed

CHG-1

6.1 Chapter 2 – Work Initiation and Screening

Chapter 2 provides the instructions for identifying an activity via a Work Control Form (WCF). The WCF **may** be initiated by any employee identifying a deficiency or need for the performance of work. Chapter 2 also provides the criteria and instructions for completing the Activity Screening Form (ASF). The ASF is used by RM/PMs to categorize work activities according to their hazards. The ASF **may** also be performed after an activity is identified, or by a subcontractor awarded a task through the Davis-Bacon determination.

6.2 Chapter 3 – Work Planning & Hazard Analysis Process

Chapter 3 provides the instructions for conducting the three levels of work planning, as determined by the ASF. Chapter 3 also provides the instructions for completing a Job Hazard Analysis (JHA) required for all three levels of work planning, and instructions and guidelines in conducting a more detailed Integrated Hazards Assessment (IHA) for more highly complex or hazardous activities. This chapter will be the only approved process for conducting work related hazards analyses. This chapter will also allow for the use of the new Site automated JHA Tool.

6.3 Chapter 4 - Type 1 Work Package Process

Chapter 4 provides the criteria and instructions for conducting work via the Work Package (WP) including format and approval requirements, conduct of work, change control, and close-out. This process is generally used for maintenance activities where engineering design is not required.

6.4 Chapter 5 - Type 2 Work Package Process

Chapter 5 provides the criteria and instructions for conducting activities where engineering support is necessary under the MAN-017-SERM, *Site Engineering Requirements Manual* (SERM) controls. This process coordinates the actions of the design engineer with the planner to utilize the final design package to perform the work with minimal instructions required to be specified by the planner. This process **may** be used for both Davis-Bacon and non Davis-Bacon determined work.

6.5 Chapter 6 - Type 3 Work Package Process

Chapter 6 provides the criteria and instructions for conducting work via the Construction Specification Institute (CSI) format of engineering design and work implementation methodology. This process **SHALL** only be used for Davis-Bacon determined work where specifically authorized by the Site Chief Engineer as a pilot activity. Tasks contracted by procurement **SHALL** specify this Work Package Process where applicable and authorized. All Davis-Bacon work will eventually be performed under this process once the pilots are completed. If the project is not authorized by the Site Chief Engineer to use the Type 3 Work Package Process, then the Type 2 Work Package Process **SHALL** be used.

6.6 Chapter 7 - Technical Procedure Process

Chapter 7 provides the criteria and instructions for conducting work via a technical procedure including formatting and approval requirements, conduct of work, change control, and close-out. This chapter uses the format described in the SDRM for technical procedures. It is intended to be used primarily for operations activities and activities where it is determined that a

CHG-1

maintenance technical procedure can best implement the necessary actions for a maintenance activity. Operations activities include those for equipment/system operations or for surveillances to meet Authorization Basis (AB) requirements.

6.7 Chapter 8 - Preventive Maintenance Process

Chapter 8 provides the criteria and instructions for the development and control of Preventive Maintenance activities including formatting and approval requirements, conduct of work, change control, and closeout.

6.8 Chapter 9 - Minor Maintenance Process

Chapter 9 provides the criteria and instructions for conducting minor maintenance activities. This chapter also includes a pre-approved JHA matrix for all minor maintenance tasks to allow for implementation of ISM while conducting work with minimal paperwork.

6.9 Chapter 10 - Emergency Work Process

Chapter 10 provides the criteria and instructions for performing and documenting emergency work. This chapter uses an Emergency Action Work Log (EAWL) which provides a standardized format for documenting emergency work. Emergency work is the only work activity which bypasses the ASF. This chapter, along with the Conduct of Operations Program (COOP), identifies hazards and develops controls appropriate for the urgent nature of these work activities.

6.10 Chapter 11 - Post Job Review Process

Chapter 11 provides guidance for performing PJRs, along with the criteria to determine when a PJR is required. The fifth element of ISM is feedback and this process is implemented to improve work by providing the worker a means to identify, communicate, and suggest work document and work performance improvements. This chapter includes methods for workers to provide input to help identify strengths and weaknesses in order to improve the other processes.

6.11 Chapter 12 - Glossary

Chapter 12 provides a list of terms used throughout the IWCP with their respective definitions. Unless a different definition is included in the Glossary, the definitions in the Rocky Flats Plant (RFP) Dictionary or SERM apply. The Glossary also includes a list of acronyms and abbreviations.

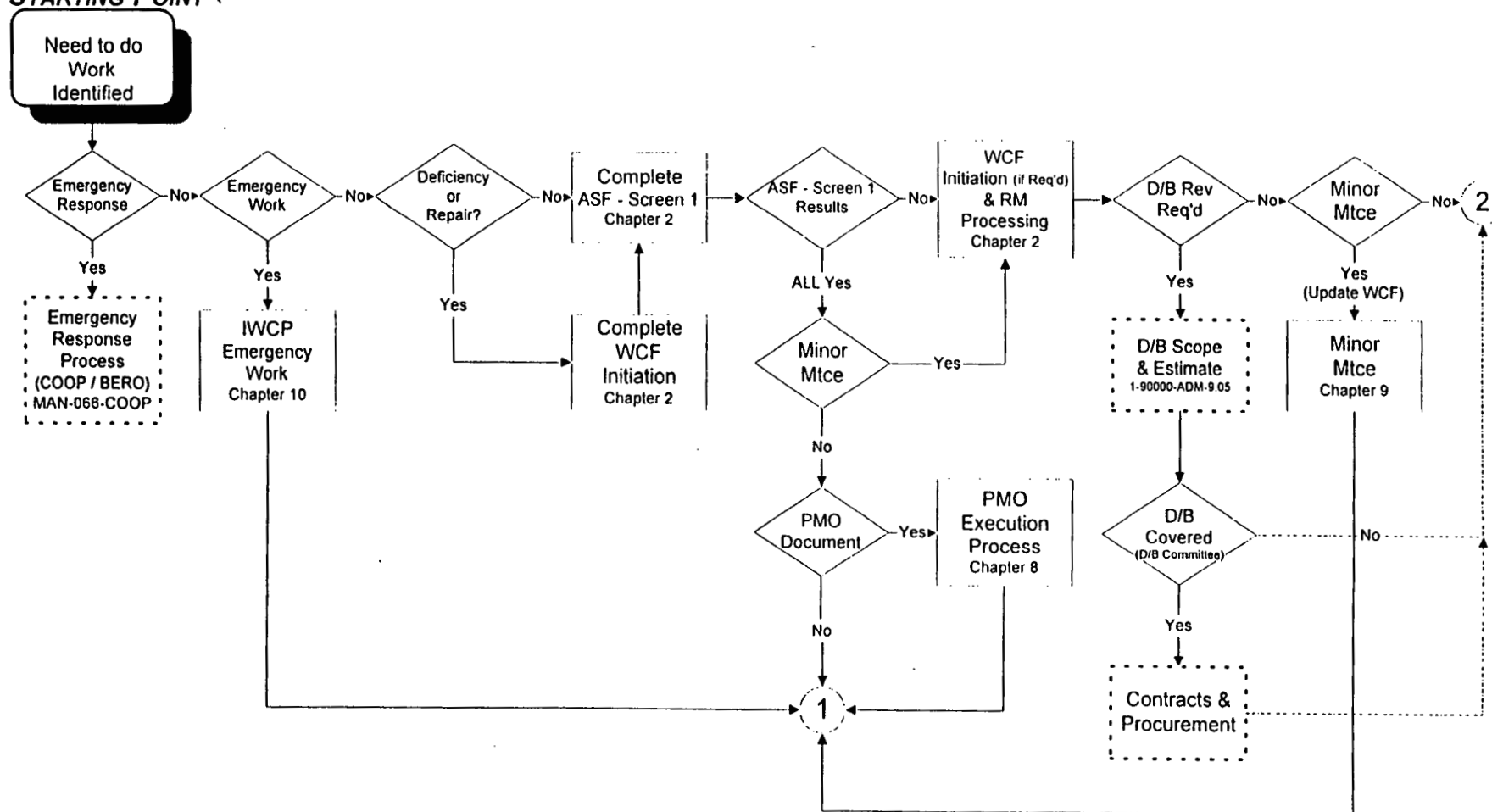
7.0 RECORDS

Records generated by this Manual are considered Quality Assurance records. The Responsible Manager (RM) **SHALL** maintain and disposition the screening decision documents in accordance with 1-V41-RM-001, *Records Management Guidance for Records Sources*.

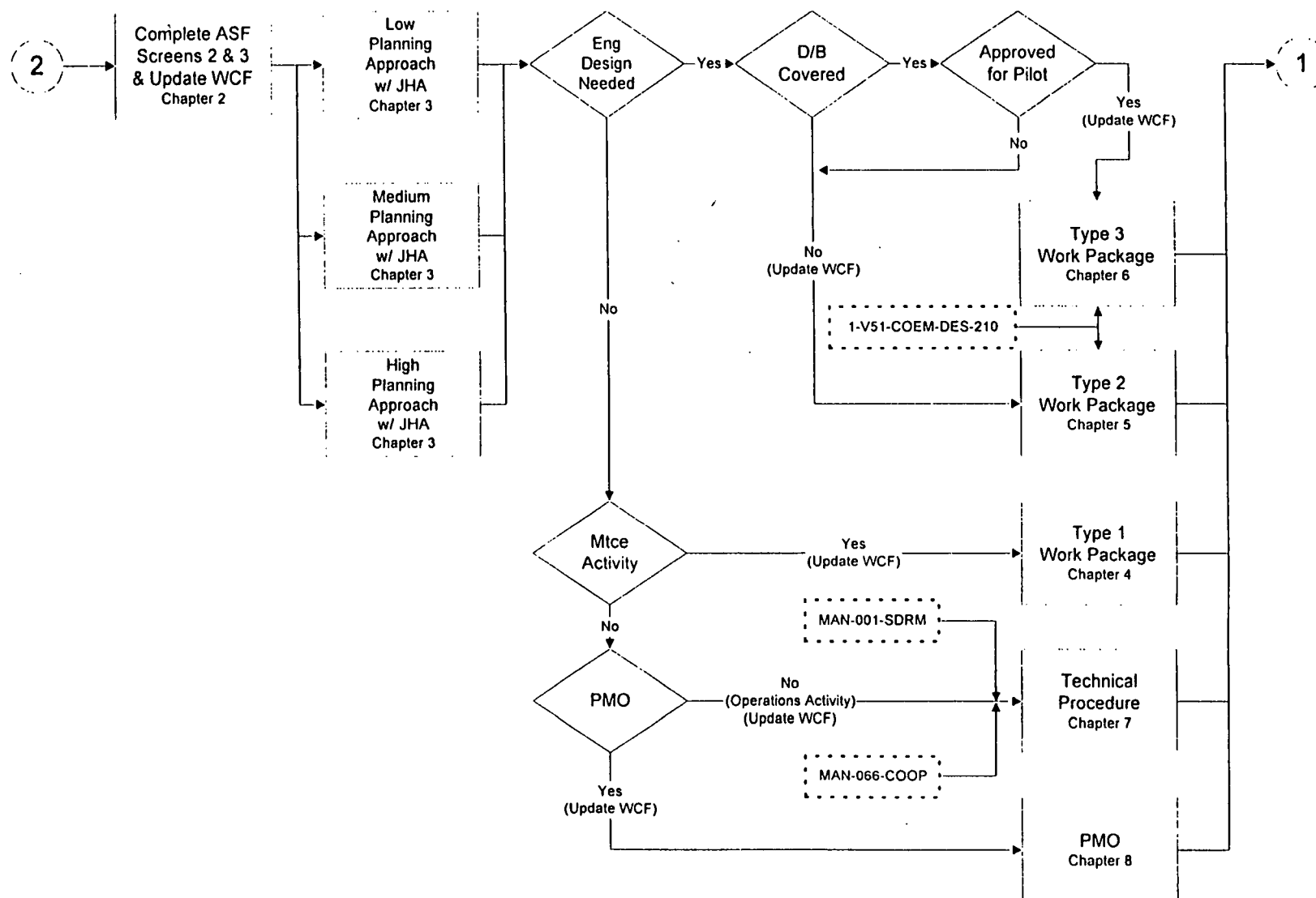
APPENDIX 1.1 - FLOW CHARTS

CHG-1

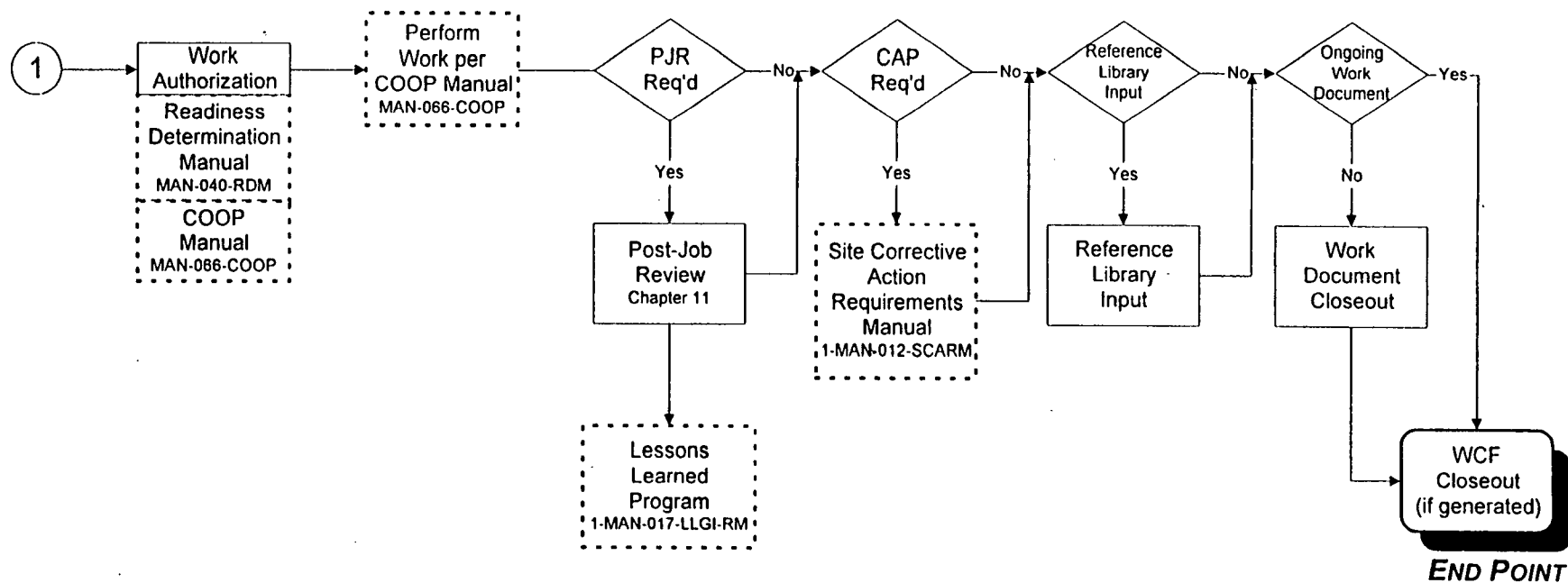
STARTING POINT



APPENDIX 1.1 – FLOW CHARTS



APPENDIX 1.1 – FLOW CHARTS



APPENDIX 1.2 – REQUIREMENTS

This appendix lists the external standards and requirements which drive the IWCP. Each requirement is identified and the method of compliance is described.

General Requirements Applied to All Work

10 CFR 830.120, *Quality Assurance Requirements* and DOE Order 5700.6C, *Quality Assurance* are the Quality Assurance regulatory documents that apply to all activities at the Site. The requirements that apply to work are specified with the other documents below.

Maintenance

This Manual implements selected Maintenance Program requirements from DOE Order 4330.4B. Remaining DOE Order 4330.4B requirements are implemented through other documents. Each of the requirements implemented by this Manual is critical to the overall objective of ensuring safe and reliable operation of facilities as well as supporting the Site mission for remediation, D&D and demolition. DOE Order 4330.4B is divided into the following two chapters:

- Chapter 1, Guidelines for the Conduct of Maintenance at DOE Non-nuclear Facilities
- Chapter 2, Guidelines for the Conduct of Maintenance at DOE Nuclear Facilities

For simplicity, only the citations from Chapter 2 are discussed below. Chapter 1 requirements are essentially the same and are implemented through a graded approach for non-nuclear activities.

Training and Qualification

Requirement

DOE Order 4330.4B, Chapter 2, Element 3, "Training and Qualification of Maintenance Personnel"

3.1, Introduction. A maintenance training and qualification program consistent with references in Paragraphs 5g and m should be implemented to develop and maintain the knowledge and skills needed by maintenance personnel to effectively perform maintenance activities. The program should be designed so that the maximum potential of maintenance personnel is fulfilled.

10 CFR 830.120 (c)(ii) for Nuclear Facilities/Activities Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained

DOE Order 5700.6C, 9. b. (1) (b) for Non-Nuclear Activities Personnel SHALL be trained and qualified to ensure they are capable of performing their assigned work. Personnel SHALL be provided continuing training to ensure that job proficiency is maintained.

Implementation:

Personnel conducting planning activities as outlined in this manual **SHALL** be briefed in accordance with 1-S52-T&Q-TR-004, *Training Requirements*.

Individual companies are responsible for determining qualifications for staff that plan work using the IWCP. Qualification packages, if needed, **Should** be developed and documented in accordance with 96-RF/T&Q-0005, *Training and Qualification Program*, in the Training Users Manual (TUM).

Types of Maintenance

Requirement

DOE Order 4330.4B, Chapter 2, Element 5, "Types of Maintenance"

5.1, Introduction. A proper balance of corrective and preventive maintenance should be employed to provide a high degree of confidence that facility equipment degradation is identified and corrected, that equipment life is optimized, and that the maintenance program is cost effective. The maintenance program includes preventive, predictive, and corrective maintenance.

Implementation

Corrective maintenance is implemented by this Manual. Preventive maintenance identification and programmatic implementation is through the "Preventive Maintenance Program Plan". K-H and subcontractor responsibilities are identified in this document which includes equipment selection, maintenance action and frequency selection, and database control. Preventive maintenance order (PMO) development and work performance are implemented in Chapter 8 of this Manual. Predictive maintenance is not included because of the Site mission and graded approach implementation.

Maintenance Procedures

Requirement

DOE Order 4330.4B, Chapter 2, Element 6, and "Maintenance Procedures"

6.1, Introduction. Maintenance procedures and other work-related documents (e.g., drawings and instructions) should be prepared and used to provide appropriate work direction and to ensure that maintenance is performed safely and efficiently. One of the key elements needed to consistently perform maintenance in a safe and efficient manner is the proper use of written procedures. A balance combination of written guidance, crafts, skills, and workmanship essential to safe and reliable facility operation.

Implementation

Maintenance procedure development and revision is implemented by Chapter 8 of this Manual and the SDRM. The procedures are worked through other Chapters in this Manual, either through the Work Package (WP) Processes or directly through the WCF Process.

Planning of Maintenance

Requirement

DOE Order 4330.4B, Chapter 2, Element 7, "Planning, Scheduling, and Coordination of Maintenance"

7.1 Introduction (Paragraph 1). An effective system for planning, scheduling, and coordinating maintenance activities should be implemented in order to: ensure that maintenance is accomplished in a timely manner; improve maintenance efficiency; reduce radiation exposure (ALARA); and increase equipment availability. Planning and scheduling involve assigning priorities that reflect the importance of maintenance work relative to safe and reliable facility operation; identifying logistics, personnel support, and other preparation; and minimizing any adverse impact that the maintenance has on facility

operation. Coordination of work ensures that needed support (e.g., clearance tagouts, radiation work permits, quality control) is available (References in Paragraphs 5f, e, and m apply).

Implementation

Planning is implemented through the three levels of planning defined through the ASF and also through the individual Work Package Processes. Scheduling and coordination of maintenance is implemented through other Site documents.

Control of Maintenance Activities

Requirement

DOE Order 4330.4B, Chapter 2, Element 8, "Control of Maintenance Activities"

8.1 Introduction. Management involvement in control of maintenance activities should ensure that maintenance practices are effective in maintaining safe and reliable facility operation. This control should extend to all facility, other contractor, and subcontractor personnel involved in maintenance activities. Rigorous control of maintenance activities should be directed toward achieving high-quality work performance, personnel safety (including radiological protection), equipment and system protection, and facility safety and reliability.

The work control program should be based on administrative procedures that address identification of needed work, planning and preparation for work, establishment of conditions to perform work, conduct of work activities, documentation of completed work, post-maintenance acceptance of work, return-to-service procedures, review of completed work records, control of temporary repairs, and controls placed on non-facility contractor and subcontractor personnel working in the facility. The program should also make provision for collecting and storing equipment maintenance data (Paragraph 16).

This Paragraph describes the attributes of an effective program for controlling activity maintenance activities. References in Paragraphs 5e, f, l, and m apply.

10 CFR 830.120 (c)(2) (i) for Nuclear Facilities and activities Work shall be performed to established technical standards and administrative controls using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.

DOE Order 5700.6.9. b (2) (a) for Non-Nuclear Activities Work shall be performed to established technical standards and administrative controls. Work shall be performed under controlled conditions using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.

Implementation

This Manual implements the above requirements.

Post Maintenance Testing

Requirement

DOE Order 4330.4B, Chapter 2, Element 9, "Post-Maintenance Testing"

9.1 Introduction. Post-maintenance testing should be performed to verify that components will fulfill their design function when returned to service after maintenance. Post-maintenance testing includes all testing performed after maintenance activities. An effective post-maintenance testing program should apply to all maintenance activities and address each organization's responsibilities, equipment to be included, degree and type of testing, procedure needs, acceptance requirements, testing control, and results documentation. Post-maintenance testing could be as simple as checking manual valve for leaks at normal operating pressure after packing adjustment or as detailed as an in-depth diesel generator performance test.

This Paragraph describes a program for specifying, performing, documenting and accepting post-maintenance testing. References in Paragraphs 5f and m apply.

Implementation

The Work Package Processes in this Manual and the SERM implement this requirement.

Modification Work

Requirement

DOE Order 4330.4B, Chapter 2, Element 18, and "Modification Work"

18.1 Introduction. Facility modification work, including temporary modifications, should be accomplished under the same basic administrative controls as those applied to facility maintenance activities so that there are no increases in risk to facility, equipment, environment, or personnel because of the modification work.

This Paragraph describes the required updating to the maintenance program as result of facility modifications and the handling of temporary modifications.

DOE Order 5480.19, *Conduct of Operations*, also has requirements to control temporary modifications.

Implementation

This Manual, the COOP Manual, and the SERM implement both temporary and permanent modifications. The SERM provides the engineering design requirements. The COOP Manual controls and tracks temporary modifications. This Manual provides the processes to document, plan, and perform the actual work.

Remediation Work

Remediation work to maintain compliance with Environmental Protection Agency (EPA), National Environmental Policy Act (NEPA), Resource Conservation and Recovery Act (RCRA), Comprehensive Environmental Response Compensation and Liability Act (CERCLA) regulations. The Site Waste Management and Environmental Protection Programs provide the specific requirements and limits. This

CHG-1

Manual provides the actual work document to implement the actions necessary bring Site environmental issues under compliance.

Operating Procedures

Requirement

DOE Order 5480.19, "Conduct of Operations Requirements for DOE Facilities", Guidelines, Chapter XVI, "Operations Procedures".

A. Introduction. Operating procedures are written to provide specific direction for operating systems and equipment during normal and postulated abnormal and emergency conditions. Operations procedures should provide appropriate direction to ensure that the facility is operated within its design bases and should be effectively used to support safe operation of the facility. Other methods of disseminating operational information are addresses in Chapter XI, Operating Orders

Implementation

Equipment/system operating procedures and AB/Safety Analysis Report (SAR) surveillance procedures are developed, revised, and implemented through controls of this manual and the SDRM. Emergency procedures are under the control of the Site Emergency Preparedness Program.

Nuclear Safety

Requirement

DOE C 420.1, Contractors Requirement Document for "Facility Safety", Section 4.1, "Nuclear and Explosive Safety Design Criteria"

Nuclear Safety

The contractor is, for nuclear safety, required to ensure that Department of Energy (DOE) nuclear facilities are designed and constructed so as to assure adequate protection for the public, workers, and the environment by application of the requirement 's contained herein. These requirements apply to the activities of design and construction of new DOE nuclear facilities and of modifications to existing DOE Hazard Category 1, 2, and 3 non-reactor nuclear facilities when the proposed modifications significantly degrades the approved safety basis for the facility. Modifications to facility design and construction during the design and construction phase shall conform to the requirements for new facilities. Activities associated with facility deactivation at end of life are exempt if justified by safety analysis.

Implementation

This Manual, the 1-MAN-018-NSM, *Nuclear Safety Manual* (NSM) and the SERM control both design and work implementing documents. This Manual provides the processes to document, plan, and perform the actual physical work. The NSM delineates the controls to ensure that nuclear activities are conducted safely. The SERM provides the engineering design required.

CHG-1

Documents and Records

Requirement

10 CFR 830.120 (c)(1)(iv) for Nuclear Facilities/Activities

Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained.

DOE Order 5700.6C, 9.b.(1)(d) for Non-Nuclear Activities

Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained.

Implementation

This manual references the controls necessary to ensure that required documentation is generated and maintained.

Integrated Safety Management

Requirement

DOE P 450.4, *Safety Management System Policy* describes the five functions and seven principles of ISM and how they are to be applied at DOE sites.

Implementation

This Manual implements the Site's ISMS by ensuring the five functions of ISMS are implemented at the activity level. These five functions are:

- Define the scope of work
- Identify and analyze the hazards
- Identify and implement the appropriate controls
- Perform the work using the controls
- Provide feedback on the work and planning process to improve the outcome

In general, where this manual refers to a "manager", it means the line manager responsible for the conduct of an activity or piece of work, because line management is responsible for the safe conduct of work on the Site. The planning processes used to identify hazards and identify and implement controls for those hazards are graded to the level of the hazards and their potential effects on the public, the workers, and the environment. The methods and vehicles (procedures, work packages, specifications, etc.) used to convey the established controls to the worker for use are chosen to be appropriate for the work force performing the work. Additional detail on the ISMS Program can be found in 1-MAN-016-ISM, *Integrated Safety Management Manual*.

APPENDIX 1.3 - TRAINING GUIDELINES

As part of the work planning process, controls are developed and implemented to prevent or mitigate hazards. Training is one form of work control that must be considered and requirements determined during the work planning process. Training falls in one of two categories; regulatory required training and job specific training. There are several ways that employees doing work at the Site acquire the necessary training. The RM is responsible for ensuring that personnel who engage in any job effort have the required training prior to the onset of that job. Not only do workers need the required training before commencing work, but also for nuclear facilities, access will be denied to anyone who does not meet area access training requirements. There are tools available to help the RM assure that these training requirements have been identified and met. This Appendix will identify the drivers for training on site, define the two types of training, identify the various training mechanisms commonly used at the Site, and describe the tools available to manage personnel training compliance.

Training Roles and Responsibilities

Project Planners/Planning Team:

- Identifies all relevant training (regulatory required and job-specific training) for the project being planned, including training needs based on hazard assessment activity analyses (e.g., JHA/IHA).

Managers/Supervisors:

- Ensures that training requirements for regulatory required training and job-specific training are identified
- Ensures applicability of training programs
- Periodically assesses worker training status
- Schedules workers for training to ensure they remain current
- Reviews and approves requests for Exceptions from Training
- Ensures that employees attend scheduled training
- Tracks status of worker training and qualification
- Ensures facility and activity-specific instruction is sufficient for safe and correct job performance

Contract Technical Representative (CTR):

- Identifies subcontractor training requirements based upon activities and areas to be accessed—consult appropriate project and program managers and K-H Training Oversight and Integration (TO&I) for assistance
- Requires workers to be trained prior to work
- Reviews/concurs with exceptions from training for subcontractor employees
- Ensures facility-specific instruction is sufficient for safe and correct job performance by subcontractor employees
- Knows status of subcontractor training

Building/Operations Management:

- Ensures personnel assigned to their facility meet training requirements
- Ensures identified personnel are qualified for their job assignments
- Ensures visitors meet area and building entry requirements

K-H Training Oversight and Integration Integrators:

- Works with projects/companies to assist in interpreting training requirements to meet specific job needs.

Site Documents that Govern Training Practices

The Level 1 document governing training and qualification practices at the Site is the Training Users Manual (TUM). K-H has a Level 3 training procedure that describes specific training practices for K-H. Each Prime contractor has an approved training program plan and supporting procedures that are based on the requirements set forth in the TUM and concurred with by K-H TO&I. Specific training practices that are not documented by the principal subcontractors default to the TUM and the K-H Level 3 procedure for guidance.

The TUM sets standards and requirements for all training programs at the Site. It is the definitive source on the training and qualification process at the Site for training requirements, records requirements, exceptions from training, training audience descriptions, course durations, delivery mechanisms, and refresher timing. The TUM is comprised of four Level 1 procedures:

- Training and Qualification Program
- Exceptions from Training
- Training Requirements
- Training Implementation Matrix Development and Approval

This document is available from Site Document Control. It is accessible from the Site Intranet, the and the Windows NT Server Network

Types of Training

There are two broad categories of training at the Site. The first is regulatory required training. This type of training includes topics such as radiological training, waste handling and management, nuclear criticality safety, security, and various Occupational Safety & Health Administration (OSHA) driven courses. Regulatory required training content is determined by individual program owners who work with training experts to create curriculum consistent with the federal, state, and site specific driver documents for each program (e.g., Radiological Control Manual, Health and Safety Plan (HASP), OSHA, Resource Conservation and Recovery Act (RCRA) permit, etc.).

The second type of training is called job-specific training. This includes use of equipment and work processes. For more routine jobs, skill of the craft may cover the need for training, but for more complicated, non-routine work there may be a need for on-the-job training to prevent or mitigate potential hazards associated with doing unfamiliar work with unfamiliar equipment. Guidance for how to assess on-the-job-training (OJT) needs, as well as how to implement an OJT program can be found in the TUM.

For some work, there are drivers that require demonstration of qualification, certification, or competency of the workers' skills and knowledge. The training described in this documentation can include both regulatory required training and job specific training. In nuclear buildings, DOE Order 5480.20A mandates that each facility shall have a written summary of positions requiring certification and qualification requirements. This information appears in the current approved Training Implementation Matrix (TIM). For any non-routine work, even if it is not in a nuclear facility, it is a good practice to create a training matrix by position for that project (a current example of this may be found in Training Implementation Plans [TIPs]). Implementation of qualification, certification, or competency

requirements shall use a graded approach consistent with the hazards and risks associated with the work, the mission and characteristics of the facility, and any other relevant factors. Further details on qualification, certification, and competency requirements can be found in the TUM.

Training Mechanisms

Training takes place at Rocky Flats through a variety of mediums and platforms. This includes classroom, Computer Based Training (CBT), and (Interactive Video Disc (IVD) training are scheduled and delivered through the K-H TO&I group. Web-based training, which will be increasingly available, is available via any desktop computer that is hooked to the LAN. OJT, including demonstrations and mock-ups, toolbox meetings, pre-evolution briefings, and continuous training programs are all administered at the company/project level.

Training Management Tools

Site training that fulfills regulatory requirements is described in Table 1 of the TUM. Table 1 is where details exist about training for area access and Environmental Health & Safety courses applicable to broad audiences. Table 1 does NOT include most job specific or activity specific training; these are defined and managed by projects; nor does it include most qualification or certification programs; these are defined and managed by companies. It also does not include training on computer software or personal or professional development topics; these are also defined and managed by individual companies.

The Training Decision Assistant (TDA) is an interactive tool designed to help the user determine their regulatory required training needs by answering questions about the nature of their job. It is available on the Training server that can be accessed via the NT network.

The Training Scheduling Records Management Tool is a program that allows users to find out:

- Employee training histories
- Whether employees are current in their required training
- Which employees are current for a given set of training
- Who is currently scheduled for training?

The Training Scheduling Records Management Tool allows for more sophisticated management of employee training issues, including on-line scheduling of courses. Both of these programs are available on the Site client/server. Access from one's desktop computer is granted to qualifying individuals by contacting the K-H TO&I group.

CHAPTER 2 - WORK INITIATION & SCREENING

1.0 PURPOSE

This chapter provides the mechanism for requesting or initiating work via a Work Control Form (WCF).

This chapter also provides requirements, instructions, and criteria to screen all projects/activities by:

- Characterizing an activity
- Profiling the hazards associated with an activity
- Selecting the appropriate work planning process for integrating the appropriate safety management infrastructure programs

2.0 SCOPE

The identification of a need to perform work and the initiation and evaluation of the WCF are described. This chapter also describes the required planning elements for conducting the three levels of work planning which are graded to the complexity of the work, the hazards encountered in performing the work, and the uncertainty about the work and the hazards it entails. The level of work planning required is determined by the results of the ASF. The ASF results are expected to be available for use before planning begins. The options available to the RM for planning the work are:

- **Low planning level approach** – activity hazards and complexity are low and the work is either routine or simple and there is some experience at performing most, if not all, of the work.
- **Medium planning level approach** – usually applied when there are some significant hazards associated with the work or some uncertainty exists about the hazards. The activity is somewhat complex, or the activity has not been performed by the associated project team at the Site.
- **High planning level approach** – usually applied when there are significant hazards associated with the activity (or significant uncertainty exists about the hazards), and there is significant activity complexity or the activity has not been performed by the associated project team at the Site.

3.0 APPLICABILITY

All work is screened via this manual. If the work involves maintenance, then a WCF is initiated first. Otherwise, the ASF is generated directly.

The ASF **SHALL** be applied to the following:

- New projects/activities/subcontractor services
- Any work activity for which the hazards, processes, equipment, or controls have changed since the last time it was performed, or for which the work control/planning documents require development or revision (includes the creation of new or revisions to existing

procedures, work packages, Project Management Plans, User Requirement Documents, service contracts, etc.)

No work performed at the Site is exempt from the requirements of this manual without first being screened. The ASF will identify any activities for which adequate controls currently exist for performing work safely and no additional planning effort is required.

To assist the RM in using the ASF and clarifying those activities for which adequate controls currently exist, the following items have been pre-screened and **may** be conducted using good technical judgement by those performing the work. Any pre-screened activity **may** be performed within the requirements of the IWCP, if deemed appropriate by the job supervisor. Any new subcontracted services or procurements **SHALL** be evaluated by the Contract Technical Representative (CTR) to determine the appropriate application of ISMS and IWCP.

To ensure safe work performance, RMs **Should** consider screening some of the below listed projects/activities that potentially have higher degrees of hazards, complexity, or uncertainty associated with them; or that are not routinely performed. In addition, RMs **Should** pay particular attention to discovery of new hazards or other areas that can change the scope of work or control set. Discovery of previously uncharacterized hazards is typically indicative of high uncertainty in the hazard profile and could affect a facility's AB.

The following routine repair and servicing activities are prescreened:

- Routine repair and servicing of vehicles including automobiles, trucks, bicycles, graders, forklifts, fire trucks, etc. Routine repair and servicing includes vehicle tire changes, engine/body repair, battery testing, alignment, fluid replacement, windshield replacement, etc. Load testing is not included.
- Routine repair and servicing of office equipment including computers, drives, scanners, fax machines, copiers, telephones, electric punching/cutting and stapling equipment, typewriters, office furniture, date/time stamps, postage meters, shredders, blueprint machines, printers, etc.
- Routine repair and servicing of laboratory equipment including audiometers, medical equipment (excluding x-ray devices), sterilizers, microscopes (excluding electron microscopes), etc.
- Routine repair and servicing of miscellaneous equipment including security booths, heavy mobile equipment, video badging, binoculars, treadmills and exercise equipment.

Contract Technical Representatives (CTRs) evaluate Statements of Work (SOWs) to determine ISMS clause incorporation and IWCP applicability into the respective subcontract in accordance with 1-W36-APR-111, *Acquisition Procedure for Requisitioning Commodities and Services*.

4.0 OVERVIEW

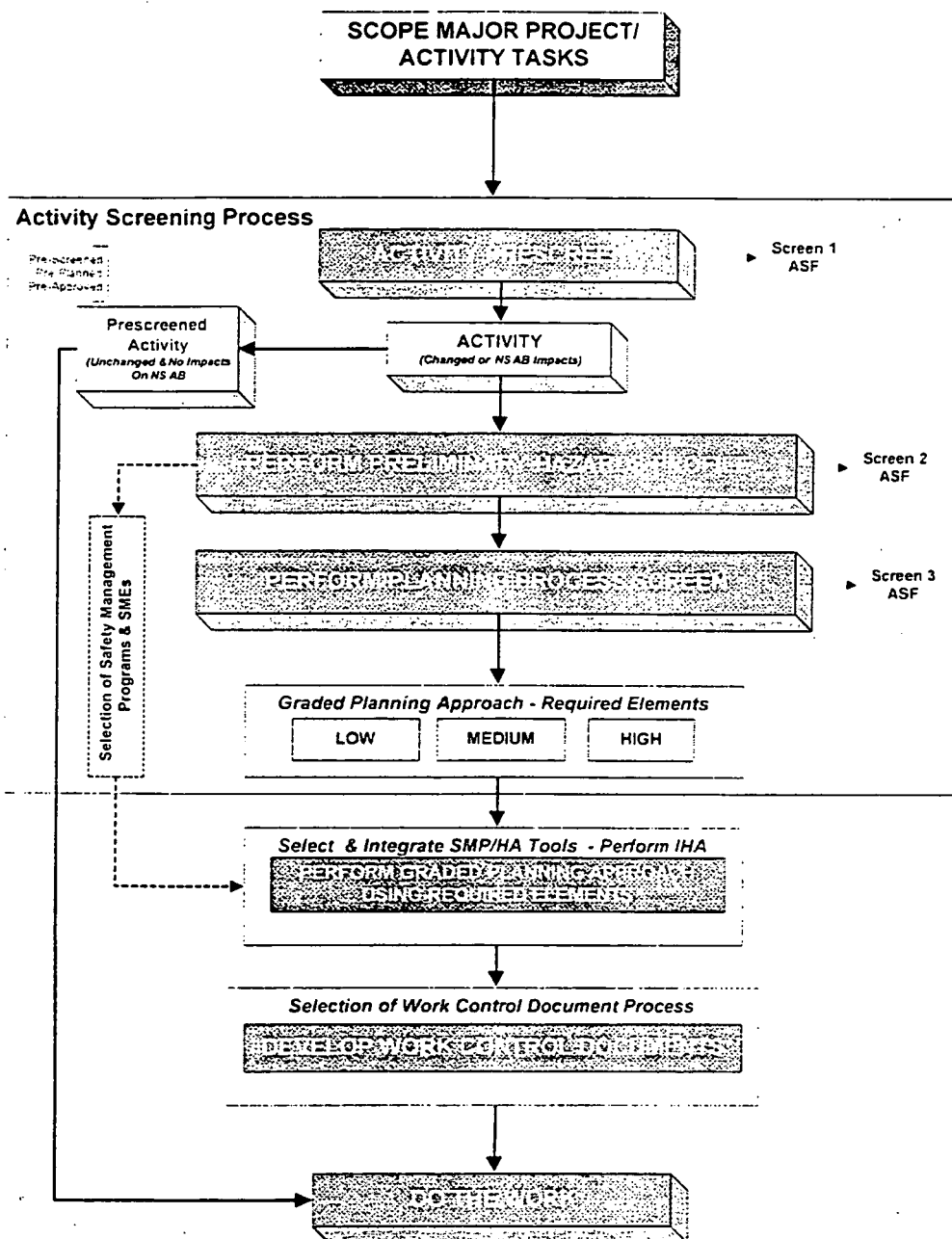
The generation of a WCF and an ASF facilitates the decision-making processes which are essential to ISM. Once work is identified, the ASF identifies the integrated work planning and

control process to be used to plan a work activity. Specifically, identified work activities planned each fiscal year as part of the Site mission require an appropriate planning approach to ensure that work is performed safely.

The appropriate level of work planning is selected as a function of hazard, experience, uncertainty, and complexity. The ASF is designed to help PMs/RMs characterize activities, profile hazards, and identify infrastructure programs and level of planning that will be used to derive controls for preventing or mitigating the hazards posed by the work activity under consideration. Figure 2-1 summarizes the role of the ASF within the context of the overall work planning processes.

ACTIVITY SCREENING WITHIN THE CONTEXT OF OVERALL WORK PLANNING AND EXECUTION

Figure 2-1



CHG-1

4.0 OVERVIEW (continued)

The ASF is divided into three main parts; each described in more detail below.

Screen 1: Activity Prescreen - Determining if the work activity to be performed needs further, more detailed screening per this process (for example, performing a prescreen per this process to establish whether the work activity requires assessment to support selecting a work planning process).

Prior to starting this process, the PM/RM collects all available information related to the activity being planned. Once this information is collected, the PM/RM begins the ASF by documenting the project/activity title, description, and specific work location on the first page of the ASF. The PM/RM then completes a prescreen (Screen 1) for the activity. The questions answered for Screen 1, on the ASF are used to determine if the activity can be performed using existing work execution documents with no further screens required. If additional screens are required, then both Screens 2 and 3 of the ASF are to be completed for the activity of interest.

Screen 2: Preliminary Hazard Profile - Performing a profile assessment of the type of hazards associated with the activity (for example, occupational safety, radiological, or environmental hazards) and determining the number of hazard types to be addressed by the work planning process.

The Preliminary Hazard Profile is used to determine the types of hazards involved with the work activity by answering questions relevant to the number of potential hazards present in the work activity. The overall number of hazards of the work activity is used as data input for the scoring and answering the Planning Process Screen. In addition, the recommended SMPs and relevant SMEs that are identified in Screen 2 can assist the PM/RM in completing the screens and in implementation of the selected level of planning.

Screen 3: Planning Process Screen - Selecting the appropriate level of planning to be used for the activity.

The Planning Process Screen is used to select the required level of planning to be performed, which is graded to the hazards, uncertainty, and complexity of the work activity so that the appropriate hazards assessment and controls development tools and techniques are selected. The expectation is that implementation of those controls will result in the work activity being performed safely. After the appropriate level of planning has been selected using the ASF, the PM/RM and a selected team of SMEs conduct the work activity planning.

The RM is responsible for completing and approving the ASF Screens. However, it is recommended that the PM/RM obtain SME support to ensure the work activity has been properly scoped and characterized prior to and during screening.

Controls for work activity planning and detailed integrated hazard assessment approach are provided in Chapter 3.

WCDs are developed using existing Site work control processes and procedures (for example, using procedure development techniques to support operations, work package development techniques to support maintenance, or engineering orders to support construction). Development of WCDs includes iterative review and assessment of these products including, for example, SME concurrence, management reviews, independent safety review, and quality assurance evaluations. Feedback from previous work is used in the development of the WCDs.

Development of WCDs are further discussed in Chapters 4, 5, 6, 7 and 8 of this Manual.

5.0 INSTRUCTIONS

5.1 Emergencies

5.1.1 Emergency Response

The first step in the planning process is to ensure that a true emergency does not exist. True emergencies such as spills, fires, explosions, vehicle accidents, injuries and illnesses, etc. require emergency response, rather than a methodical evaluation of scope and hazards. Emergency responses are performed by trained professionals such as Emergency Medical Technicians (EMTs) and follow emergency response procedures rather than IWCP.

5.1.2 Emergency Work

Once a determination has been made that an emergency response is not required then a work activity is screened to see if it involves emergency work. Emergency work requires immediate action to prevent serious personal injury, harm to the environment, serious loss of property or breach of security. If the proposed activity involves emergency work then no additional screening is required and the work is performed in accordance with Chapter 10.

5.2 Non-Emergencies

5.2.1 Deficiencies and Repairs

Once a work activity has been determined not to involve an emergency then a determination is made whether it involves a deficiency or a repair. If it does, then a WCF is initiated. If it does not, then ASF Screen 1 is initiated. A WCF acts like a traveler attached to a WCD, summarizing data, determinations, choices and status. The form is filled out sequentially from origination through closure. Each section includes additional information necessary to ensure the IWCP process is followed.

5.2.2 Filling Out The WCF

Section 1 - Report Initiation

The originator uses this section of the WCF to document the details about the work activity. The data to be inserted in this section is self-explanatory.

The WCF originator may obtain the status on the disposition of the WCF at any time after initiation through inquiry into the Work Control Database, or by checking with the RM or designee responsible for Work Control Database administration.

NOTE: *The RM Should be contacted if the originator is uncertain about the information in Section 1.*

Section 2 - Shift Manager/Responsible Manager Review

The Shift Manager/Responsible Manager **SHALL** review the WCF for any impacts on the safety of the facility, along with any impacts applicable to the AB Document. He/she **SHALL** then take the appropriate actions as required by the AB Document and/or the COOP Manual.

CHG-1

Section 3 - Responsible Manager (RM) Evaluation

The RM completes this section of the WCF to assign a work priority, support requirements, work description, responsible organization, and a desired resolution date.

If the identified condition is not considered to be deficient, or the work requested is not considered to be valid, then the RM disapproves the WCF, listing justification and returns a copy of the WCF to the originator.

Project Data

The RM **SHALL** also establish a priority for the work and if additional documentation/information is required, the RM **Should** return the WCF to the Originator for the necessary documentation.

NOTE: *If the work activity is determined to be Priority 1, Emergency Work, proceed directly to Chapter 10, Emergency Work Process. The WCF may be completed upon completion of the Emergency Work.*

Table 2-1 – Work Priority Descriptions

<u>Number</u>	<u>Priority</u>	<u>Description</u>
1	Emergency	Requires immediate action to prevent serious personal injury, harm to the environment, including hazardous waste spills, a breach to security, or a serious loss of property.
2	Urgent	Requires rapid action to ensure safety to personnel or the environment, to correct problems deemed critical to sustain the current mission of a facility, or to correct deficiencies in Special Nuclear Materials security alarm systems or environmental regulatory compliance facilities, systems, or hardware as defined in this procedure.
	2A	Involves rework of VSS/SSSC/FSS or Criticality Safety Hardware.
	2B	Involves modifications to VSS/SSSC/FSS or Criticality Safety Hardware.
	2C	Involves safety work not involving VSS/SSSC/FSS or Criticality Safety Hardware.
	2D	Involves repairs or modifications to environmental regulatory compliance facilities, systems, or hardware.
3	Required	Requires routine action to comply with technical or administrative requirements.
4	Desirable	Requires routine action to implement improvements or correct deficiencies not directly related to sustaining the mission of the facility.

CHG - 1

The RM will complete the IMPACTS AND SUPPORT REQUIREMENTS SECTION of the WCF, by answering the following questions:

ENGINEERING SUPPORT NEEDED is circled "YES" if:

- The requested work activity replaces or modifies a system, structure or component (SSC) with other than original or like-for-like replacement item
- The requested work activity modifies the Site's technical basis configuration for a facility, SSC, safety-related software or Site lands
- A replaced or modified item requires other than minor connecting hardware to complete installation.

AB SAFETY SYSTEM is circled "YES" if:

- The identified condition challenges the operability of a Vital Safety System (VSS), Safety Significant System or Component (SSSC) or a Facility Safety System (FSS)
- The requested work activity modifies or repairs VSS, SSSC or FSS hardware or software or impacts a vital safety function
- The requested work activity requires modification of an existing VSS, SSSC, or FSS related procedure

IMPACTS OSR/TSR is circled "YES" if:

- The requested work activity creates an out-of-tolerance condition per the facility AB
- The identified condition challenges an Operational Safety Requirement/Technical Safety Requirement (OSR/TSR)

IMPACTS CRITICALITY SAFETY is circled "YES" if:

- The requested work activity requires modifications or repairs to criticality safety hardware or software including limits
- The identified condition challenges a Nuclear Material Safety Limit (NMSL) or a Criticality Safety Operating Limit (CSOL)

Davis-Bacon Section

DAVIS-BACON REVIEW is circled YES if the work request is Davis-Bacon Act applicable in accordance with the requirements identified in 1-90000-ADM-9.05, *Davis-Bacon Process*.

If YES was circled for Davis-Bacon Review, then a Scope and Estimate **SHALL** be performed and submitted for review in accordance with 1-90000-ADM-9.05, *Davis-Bacon Process*. The RM **SHALL** not complete the processing of the WCF until the Davis-Bacon determination has been completed. If it is determined that Davis-Bacon is applicable, the work request must be entered into the database.

The RM **SHALL** circle either COVERED or NOT COVERED based on the Davis-Bacon determination.

The RM **SHALL** determine if the activity is minor maintenance based upon meeting all of the following criteria:

CHG-1

- The component is SC Category 3 or 4, and the work to be performed will not affect or compromise the operability of any SC 1/2 components.
- If the component is SC 1/2, as cited or credited within an AB document, the portion or part being worked clearly and obviously does not perform or affect the component operability requirements.
- The integrity of a sealed component will not be violated (i.e. transformer).
- Material substitutions will clearly and obviously not be involved.
- Welding identified in the Site Quality Assurance Program (SQAP) to verify conformance shall not be performed.
- The work performed is of such a minor nature that a written procedure is not required. If a procedure exists, it **may** be used.

If the activity is Minor Maintenance, circle "Yes" on the WCF and conduct work per Chapter 9. No further actions on the WCF are required until the Minor Maintenance Activity is completed, then the WCF Closure – Section 5 **SHALL** be completed.

NOTE: *When more than one organization participates in the resolution process, the assignment reflects the organization with primary or lead responsibility; the Maintenance Manager **may** assume the lead responsibility.*

WCF Approval

The RM/PM **SHALL** assign the WCF to the Responsible Organization by recording the organization name on the RESPONSIBLE ORGANIZATION line (for example, Operations, Maintenance Department, or Engineering) and then he/she **SHALL** sign and record his/her employee number.

This information is then entered into the WCF Database, with the exception of Authorization Projects and is then forwarded to the Responsible Organization.

Section 4 - Responsible Manager Planning

Activity Screening Form Summary

The RM/PM **SHALL** complete the ASF per Section 5.2.3 and Appendix 2.2 of this chapter, if not previously performed and document the PLANNING LEVEL by circling either HIGH, MEDIUM, or LOW, depending on the results of the ASF. Note that an ASF may have already been performed.

He/she **SHALL** then document the SME support based on the results of the ASF screen.

Work Document Selection

The RM/PM **SHALL** determine the method for WCD development based on the following:

- Type 1 Work Package (Chapter 4) is used for maintenance activities that do not involve an engineering design modification.
- Type 2 Work Package (Chapter 5) is used for activities that require an engineering design package as defined by 1-V51-COEM-DES-210, *Design Process Requirements* (DES-210). This covers both Davis-Bacon covered and non-covered work.

CHG -1

- Type 3 Work Package (Chapter 6) is used for activities that are Davis-Bacon covered work. This WCD type is only used for pilot activities as authorized by the Site Chief Engineer (SCE).
- Technical Procedures (Chapter 7) are used for those activities that do not fall under the category of maintenance or do not require an engineering design package per DES-210. These are usually activities that are used for operations of equipment or systems, or for risk reduction operations, which are usually completed using a procedure rather than a work package.
- PMs (Chapter 8) are used for those activities that fall under the classification of Preventive Maintenance.

The RM **SHALL** then sign and record his/her employee number, enter this information into the WCF Database, with the exception of Authorization Projects, and perform the work per the approved WCD.

Section 5 - Closeout

The RM/PM **SHALL** annotate whether or not the following activities were required for the WCD:

- Post Job Review performed
- Corrective Action Program (CAP) action required
- Reference Library input required for WCD

He/she **SHALL** document if a Standard Work Package (SWP) was used (and the SWP number), document if the work was canceled or completed and close out the WCF in the WCF Database, and providing signature and date.

5.2.3 Activity Screening Form (ASF) Instructions

The RM **SHALL**:

- Complete Block A of the ASF, Activity Information
- Complete the ASF, Block B - Activity Prescreen - Screen 1
- If Screen 2 is required, complete Block D by checking YES or NO for each hazard listed
- Total the number of Yes answers in Screen 2, then proceed to Screen 3
- If Screen 3 is required, complete all sections in Block E
- Sum the Score column for lines 30 through 49 and enter this as a total score
- If the TOTAL SCORE is between 1 and 15, use the LOW planning level requirements for this work activity (see Table 7-1)
- If the TOTAL SCORE is between 16 and 40 use the MEDIUM planning level requirements for this work activity (see Table 7-1)
- If the TOTAL SCORE is equal to or greater than 41 use HIGH planning level requirements for this work activity (see Table 7-1)
- If the total score is +/- 3 points of the threshold between Low and Medium levels (e.g., 15 points +/- 3 points) or +/- 5 points of the threshold between Medium and High planning process levels (e.g., 40 points +/- 5 points), the RM **SHALL** obtain confirmation of the selected level from another RM. From this confirmation, the RM has the option to revise the

CHG-1

selection. The RM has the final responsibility for selection of the work planning process; however, senior management **may** elect to upgrade the level of planning at their discretion.

- Complete Block C of the ASF. Retain this form as a QA record. The ASF **Should** be placed in the work document or can be maintained in the work document history file.

CHC

APPENDIX 2.1 – WORK CONTROL FORM

Page 1 of 2

WORK CONTROL FORM

Page 1 of 2

WORK CONTROL NO.

SECTION 1

REPORT INITIATION

ORIGINATOR DATA

NAME: _____ EMP NO: _____ DATE: _____ TIME: _____
COMPANY/ORG: _____ BLDG: _____ EXT: _____
SOURCE DOCUMENT NO. (Attach Copy): _____

EQUIPMENT/FACILITY DATA

DESCRIPTION OF WORK REQUEST: _____

EM/PM NO: _____ BLDG NO: _____ LOCATION: _____
EQUIPMENT NAME/DESCRIPTION: _____
MANUFACTURER: _____ MODEL NO: _____ SERIAL NO: _____

SECTION 2

SHIFT MANAGER REVIEW

Comments: _____

SHIFT MANAGER SIGNATURE: _____ EMP NO: _____

SECTION 3

RESPONSIBLE MANAGER EVALUATION

PROJECT DATA

PROGRAM AREA: _____ COMPLIANCE DATE (IF ANY): _____
CORRECTIVE ACTION TITLE: _____
PRIORITY LEVEL: 1 2 2A 2B 2C 2D 3 4 WBS CODE: _____
RESOLUTION/COMMENTS: _____

IMPACTS AND SUPPORT REQUIREMENTS

ENGINEERING SUPPORT NEEDED:	Yes	No	IMPACTS OSR/TSR:	Yes	No
IMPACTS CRITICALITY SAFETY:	Yes	No	AB SAFETY SYSTEM:	Yes	No

DAVIS-BACON DETERMINATION

DAVIS-BACON REVIEW REQUIRED: Yes No
DAVIS-BACON DETERMINATION: Covered Not Covered Both (Use Type 2)

CHG-1

WORK CONTROL FROM
Page 2 of 2

WORK CONTROL FORM

Page 2 of 2

MINOR MAINTENANCE DETERMINATION

The following criteria must all be met in order to perform the activity as Minor Maintenance:

1. The component is SC Category 3 or 4, and the work to be performed will not affect or compromise the operability of any SC 1/2 components.
2. If the component is SC 1/2 as cited or credited within an AB document, the portion or part being worked clearly and obviously does not perform or affect the component operability requirements.
3. The integrity of a sealed component will not be violated (i.e., transformer).
4. Material substitutions will clearly and obviously not be involved.
5. Welding identified in the Site Quality Assurance Program (SQAP) to verify conformance shall not be performed.
6. The work performed is of such a minor nature that a written procedure is not required. If a procedure exists, it may be used.

MINOR MAINTENANCE: Yes No

RM APPROVAL

RESPONSIBLE ORGANIZATION: _____ DATE: _____ TIME: _____
RESPONSIBLE MANAGER SIGNATURE: _____ EMP NO: _____

SECTION 4

RESPONSIBLE MANAGER PLANNING

ACTIVITY SCREENING FORM SUMMARY

PLANNING LEVEL: High Medium Low

SME SUPPORT (FOR HIGH & MEDIUM): H&S RAD NS CRIT ENV OTHER

WORK DOCUMENT SELECTION

WORK CONTROL DOCUMENT TYPE: PM Technical Procedure Type 1 Type 2 Type 3

RM APPROVAL

RESPONSIBLE MANAGER SIGNATURE: _____ EMP. NO.: _____

SECTION 5

CLOSEOUT

FEEDBACK

POST JOB REVIEW: Yes No CAP: Yes No REFERENCE LIBRARY INPUT: Yes No

STANDARD WORK PACKAGE USED: Yes No SWP NO.: _____

LESSONS LEARNED INPUT: Yes No

RM CLOSURE

WORK IS: Canceled Completed CLOSED IN WCF DATABASE Yes No

RESPONSIBLE MANAGER SIGNATURE: _____ DATE: _____

RF-47454 9/98

CHG-1

APPENDIX 2.2 - ACTIVITY SCREENING FORM

Page 1 of 6

BLOCK A - ACTIVITY INFORMATION		BLOCK C - APPROVALS		
Activity Title:		Project Manager/Responsible Manager Approval:		
Specific Work Location (s):		Name (Print)	Signature	Ext. Date
Major Tasks/activities:		Confirmation from another PM/RM (as required):		
<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> 1. 2. 3. 4. 5. </div> <div style="width: 48%;"> 6. 7. 8. 9. 10. </div> </div>		Name (Print)	Signature	Ext. Date
		Subject Matter Experts Supporting Screen:		
		Name	Org.	Name Org.
		Name	Org.	Name Org.
		Name	Org.	Name Org.
		Name	Org.	Name Org.
BLOCK B - WORK ACTIVITY PRESCREEN -- SCREEN 1		YES	NO	COMMENTS
1. Has this work activity been previously performed at the Site, since July 1995, and do approved work controls and/or documents currently exist to perform the work.				
2. Have the impacts that this specific work activity can have on, or in, a Hazard Category 2/3 nuclear facility, its support systems, or its authorization basis documentation requirements or controls been determined?				
3. Are the processes, type of equipment, hazards, controls, and work control documents the same since the last time this work activity was performed? (e.g., no significant change in location, material, equipment used, engineered/administrative controls, or procedures).				
Check Appropriate Box <input type="checkbox"/> If questions 1 through 3 are answered YES, completion and documentation of this ASF is not required. <input type="checkbox"/> Any one or more of questions 1 through 3 answered NO, ASF Screens 2 and 3 Required, Complete Blocks D, E, and then C.				

CHG-1

APPENDIX 2.2 - ACTIVITY SCREENING FORM

Page 2 of 6

BLOCK D -- SCREEN 2 PRELIMINARY HAZARD PROFILE	YES	NO	INFRASTRUCTURE REQUIREMENTS & TOOLS	SAFETY SME SUPPORT					
				I H & S	R A D	N S	C R I T	E N V	O t h e r
4. Will this work activity involve the use of non-ionizing radiation sources or devices, other than welding equipment (e.g., lasers, microwaves, etc.)?			HSP 12.11	X					
5. Does this work activity involve entry into a confined space?			HSP 6.04	X					
6. Is there a potential for exposure to any electrical, mechanical, hydraulic, or pressure systems; compressed gases; or pressure vessels that are not controlled or protected from direct exposure to the workers?			HSP 11.01, 11.03 HSP 15.00	X					
7. Will workers be exposed to chemical environments that will be Immediately Dangerous to Life and Health (IDLH)?			HSP 7.05	X					
8. Will this work activity involve working with lead, lead products, or lead contaminated equipment that could pose an inhalation, ingestion, or injection hazard?			HSP 13.07	X					
9. Will this work activity involve working with beryllium or beryllium contaminated equipment that could pose an inhalation, ingestion, or injection hazard?			HSP 13.04	X					
10. Does this work activity involve working with carcinogenic materials (e.g., asbestos) that could pose an inhalation, ingestion, or injection hazard?			HSP 13.07	X					
11. Does this work activity involve use of radioactive sources, or radiation producing devices, or devices which contain radioactive sources, other than radiological check sources (e.g., radiography, x-ray machines)?			RPP		X				
12. Will this work activity be performed inside of: a) contamination area; b) high contamination area; c) airborne radiological area; or d) area previously designated as one of these?			RPP		X				
13. Will this work activity be performed inside of a: a) radiation area; b) very high radiation area; or c) area previously designated as one of these?			RPP		X				
14. Does this work activity involve working with radioactive wastes?			RPP		X	X			
15. Does this work activity involve working with non-radioactive pyrophoric materials (e.g., materials susceptible to spontaneous combustion)?			HSP	X					

APPENDIX 2.2 - ACTIVITY SCREENING FORM

Page 3 of 6

BLOCK D -- SCREEN 2 PRELIMINARY HAZARD PROFILE - (Cont'd)	YES	NO	INFRASTRUCTURE REQUIREMENTS & TOOLS	SAFETY SME SUPPORT					
				I H & S	R A D	N S	C R I T	E N V	O t h e r
16. Does this work activity involve disturbance of soil, concrete, or asphalt (<i>activities requiring a soil permit or disposition of large amounts of concrete or asphalt</i>)?			HSP, Soil Permit, RPP	X	X				
17. Does this work activity involve working with fissile material which may require criticality controls?			NSP, NCSP			X	X		
18. Will this work activity generate any sanitary, hazardous (RCRA), PCB-containing, medical or infectious, or oily waste; or wastewaters?			HSP, Environmental Program	X				X	
19. Will this work activity generate any emissions to the air that are not already approved (e.g., unfiltered contributions to an exhaust stack, fugitive emissions, ozone depleting substances, soil disturbance, use of diesel fuel, diesel powered equipment, or other Appendixes issues)?			HSP, Environmental Program	X	X			X	
20. Does this work activity involve environmental restoration or cleanup; the construction of a waste treatment, storage, or disposal unit; or the closure of a waste unit (e.g., RCRA regulated)?			HSP	X	X			X	
21. Will this work activity be conducted in an Individual Hazardous Substance Site (IHSS)?			CERCLA/RCRA	X	X			X	
22. During the normal conduct of this work activity (no upsets or accidents), is there the potential to disturb migratory birds or any threatened, endangered, or special-concern species (e.g., <i>Preble's Meadow Jumping Mouse</i>)?			Environmental Program					X	
23. During the normal conduct of this work activity (no upsets or accidents), is there the potential to adversely affect any wetland, designated natural area, surface or groundwater, or cultural resources (e.g., <i>historical, archaeological, or architectural sites</i>)?			Environmental Program					X	

CHG-1

APPENDIX 2.2 - ACTIVITY SCREENING FORM
Page 4 of 6

BLOCK D -- SCREEN 2 PRELIMINARY HAZARD PROFILE - (Cont'd)	YES	NO	INFRASTRUCTURE REQUIREMENTS & TOOLS	SAFETY SME SUPPORT					
				I H & S	R A D	N S	C R I T	E N V	O t h e r
24. Does this work activity involve firearms or explosives (excludes explosive chemicals which are included in Question 26)?			Firearms and Explosives Safety Manual, Performance Test Manual						X
25. Does this work activity involve moving, handling, processing, or transporting Special Nuclear Material, TRU, TRU/M, or radioactive pyrophoric material?			RPP, NSP, NCSP		X	X	X		
26. Does this work activity involve installation, modification, relocation, or removal of: 1) any process, building, wall, enclosure, or tank (above or under ground), 2) a radioactively contaminated system, process line, or piece of equipment; or 3) permanent radiation shielding; that may impact the condition of structures, systems, or components.			NSP, NCSP, RPP		X	X	X		
27. Will this work activity involve working with reactive, shock sensitive, explosive (e.g., natural gas, hydrogen, propane) or incompatible chemicals or materials?			HSP, FPP, Chemical Management Program	X					
28. Will this work activity involve any form of welding or the use of ignition sources, e.g., static electricity, furnaces, hot plates, sparks, open flames (i.e., "hot work")?			HSP, FPP	X					X
29. Will this work activity be performed near or in the vicinity of any hazardous material, substance, or equipment which is not directly in the scope of this work activity, but has the potential to exacerbate the hazards associated with this or create additional hazards?			NSM			X			X
BLOCK D SUMMARY Sum of the total number of questions answered yes in BLOCK D:									

APPENDIX 2.2 - ACTIVITY SCREENING FORM

Page 5 of 6

BLOCK E -- SCREEN 3 PLANNING PROCESS SCREEN	YES	NO	SCORE
HAZARD			
30. Is the Sum of all YES answers in Block D ≤ 5 ?	4	0	
31. Is the Sum of all YES answers in Block D between 6 & 10?	8	0	
32. Is the Sum of all YES answers in Block D ≥ 11 ?	14	0	
33. Will the work activity be performed in a Hazard Category 2 or 3 nuclear facility (as defined in DOE STD 1027-92)?	4	0	
34. Is this work activity authorized to be performed within the existing nuclear safety authorization basis (AB) documents?	0	4	
35. Is there a potential for this work activity to have an undesirable impact on, or in a nuclear facility, it's support systems, or it's authorization basis documentation requirements or controls? (Includes physical or structural impacts from construction or modifications; utility or support system impacts, such as domestic water, fire water, steam, or electric power; or analytical impacts from unanalyzed scenarios, such as external events involving the operation of aircraft, trains, or tankers near the nuclear facility)?	2	0	
36. Has an analysis of the potential hazards of this work activity already been performed, including the identification of required controls, and has it been documented to support the safety basis or authorization basis for this work activity?	0	4	
37. Do you have any uncertainty about the potential hazards identified and have you addressed this uncertainty in your safety basis documentation?	2	0	
38. Can the combined effect of the hazards potentially create additional hazards (e.g., incompatible chemicals, synergistic impacts)?	2	0	
39. Can the combined effect of the hazards cause a potential conflict in the controls (e.g., RWP requires glovebag for containment and criticality limits restrict how much liquid can accumulate in glovebag)?	2	0	
EXPERIENCE			
40. Has the Project Manager for this work activity previously performed ALL of this work activity at RFETS or any other site? (The Project Manager, designee, or deputy is the individual responsible for decisions regarding the performance and daily oversight of this work activity)	0	2	
41. Has the Project Manager for the work activity previously performed PORTIONS of this work activity at RFETS or any other site?	0	4	
42. Has the majority of the Team (planners, workers, safety professionals, support staff, etc.) proposed to perform this work activity previously performed ALL of this work activity at RFETS or any other site?	0	2	
43. Has the majority of the Team (planners, workers, safety professionals, support staff, etc.) proposed to perform this work activity previously performed PORTIONS of this work activity at RFETS or any other site?	0	4	
44. Have the Project Manager and proposed Team previously performed any PORTIONS of this work activity at RFETS since July 1995?	0	3	

APPENDIX 2.2 - ACTIVITY SCREENING FORM
Page 6 of 6

BLOCK E -- SCREEN 3 PLANNING PROCESS SCREEN COMPLEXITY		YES	NO	SCORE
45. How many major tasks/activities are involved in this work activity (e.g., install tap, drain tank, disposition liquid, install electrical distribution, site excavation, etc.)?				
Low Complexity ≤ 5 tasks		0	0	
Medium Complexity 6 – 9 tasks		1	0	
High Complexity ≥ 10 tasks		2	0	
46. How many people are involved in actually performing this work activity (includes support people on scene at any given time or shift, does not include oversight)?				
Low Complexity ≤ 10 people		0	0	
Medium Complexity 11 – 24 people		1	0	
High Complexity ≥ 25 people		2	0	
47. How many functional organizations provide support during the performance of this work activity (e.g., process specialists, RCTs, IH, FI, FPE, NS, CRIT)?				
Low Complexity ≤ 4 organizations		0	0	
Medium Complexity 5 – 9 organizations		1	0	
High Complexity ≥ 10 organizations		2	0	
48. How many principal subcontractors are directly involved in actually performing this work activity (e.g., SSOC, RMRS, DCI, and WSLC)?				
Low Complexity ≤ 1 subcontractors		0	0	
Medium Complexity 2 – 3 subcontractors		1	0	
High Complexity ≥ 4 subcontractors		2	0	
49. How many 3 rd -tier or 4 th -tier subcontractor are directly involved in actually performing this work activity ("hands-on")?				
Low Complexity ≤ 5 subcontractors		0	0	
Medium Complexity 6 – 9 subcontractors		1	0	
High Complexity ≥ 10 subcontractors		2	0	
SCORING		TOTAL SCORE		
Add the total scores from lines 30 through 49				
Check	<input type="checkbox"/> If The Total Score is 1 to 15, the level of planning required is LOW			
Appropriate	<input type="checkbox"/> If The Total Score is 16 to 40, the level of planning required is MEDIUM			
Box	<input type="checkbox"/> If The Total Score is 41 or greater, the level of planning required is HIGH			
<p>NOTE If the total score is +/- 3 points of the threshold between Low and Medium levels (e.g., 15 points +/- 3 points) or +/- 5 points of the threshold between Medium and High planning process levels (e.g., 40 points +/- 5 points), the PM/RM SHALL obtain confirmation of the selected level from another PM/RM. From this confirmation, the PM/RM has the option to revise the selection. The PM/RM has the final responsibility for selection of the work planning process; however, senior management may elect to upgrade the level of planning at their discretion.</p>				

CHG-1

APPENDIX 2.3 - GUIDANCE FOR SELECTION OF WORK PLANNING LEVELS

This section provides guidance related to work planning approaches covering application of the ASF as it relates to selection of work planning levels.

Graded Work Planning Approaches

There are three levels of work planning approaches that can be selected as result of the ASF screening: Low, Medium, and High.

Specific knowledge for the following factors is typically considered when determining an appropriate level of work planning:

- Scope Definition
- Work Process Flow
- Nature of the Hazards
- Complexity/Coordination/Uncertainty

In general, when more uncertainty exists about a work activity, then more rigor and analysis is required in the planning phase. A low level of planning could be required for a well understood, simple activity with a history of safe performance. Using the graded approach concept, a low-risk simple activity requires a low level of planning and could be planned by a single planner aided by a worker and perhaps a safety discipline SME; a high-risk, complicated, or large activity requires a higher level of planning and **Should** be performed by a multi-disciplined team including appropriate SMEs.

Activities **Should** be characterized as completely as possible before performing the graded hazards assessment and planning in this chapter. Characterization of the activity is an essential element in the first function of the Integrated Safety Management System ISMS, "Define the scope of work," Project Baseline Descriptions (PBDs) and Work Authorization Documents (WADs) provide a level of description for activities and work being planned and budgeted for each fiscal year. However, the ASF procedure requires that additional characterization information for an activity or work be obtained and documented in order to develop the hazard profile and select the proper planning process. The type of characterization information that needs to be considered in work activity planning process includes the following:

- The purpose of the activity or work (objective and principal driver why the activity is being performed). The type of activity or work being performed (maintenance, construction, or operations); routine, non-routine, or AB activity.
- The starting and end points for the activity (activity boundaries).
- A description of the major work steps, phases, or elements (breakdown of activity into subtasks).
- Principal types of hazards directly involved with an activity or expected to be encountered during performance of activity (keeping this assessment at a high level).
- Significant uncertainties that currently exist that could affect the performance of the activity (including activity characterization information).
- The interfaces that this activity might have with other activities (predecessor or successor relationships) and/or concurrent activities in the same location.
- History of the work activity performance, including historical records, process knowledge, interview with current/prior workforce, etc.

Once the activity planning has been completed and the work control documents have been established, the workers and their supervisors are provided with the necessary documentation and management

CHG-1

support such that work can be conducted safely. Feedback during conduct of work is used to improve the future work planning.

The ASF uses a preliminary qualitative hazard assessment approach to aid in the selection of the planning process. Once in the planning development phase, other qualitative, semi-quantitative, or quantitative hazard approaches will be identified by the team and applied as appropriate.

Table A2-1 provides an overview of the hazard assessment techniques used by typical work planning process approaches as well as the products developed by those processes and examples of the planning and implementation tools.

Table A2-1 - Work Planning Processes Products

Work Planning Process Approach	Hazard Assessment Technique	Example Planning Tools	Example Implementation Tools
Site Procedure Development	Qualitative	Procedures, Operations Orders	Procedures, Drawings, Instructional Job Aids
IWCP Approach	Semi-Qualitative to Qualitative, depending on Planning Level	JHAs, HASPs, ASAs, Work Packages	Work Packages, EDPs, Procedures
Nuclear Safety AB Development	Quantitative	AB Documents (SARs, BIOs, BFOs)	Work Packages, Procedures

"Low Planning Level" Work Control Process

The "low planning level" work control process is applied when the scoring results from the ASF screen are 15 points or less. This level of planning is usually applied when the activity hazards and complexity are low, and the work is either routine or simple and there is some experience performing most, if not all, of the work. A project management plan and a team-based approach are not normally required for this level of planning. However, a simple project management plan or a small team can be used at the discretion of the Project Manager. In most cases, a work planner or supervisor, along with a SME or worker can perform this planning effort by reviewing work experience and lessons learned from previous jobs, and then using the JHA checklist/job walk down and their combined experience evaluate the hazards and determine the controls necessary to safely perform the activity.

The activity purpose and scope can be simple statements and the project requirements (WBS and schedule) are usually small and straightforward. A JHA checklist is required for even the simplest activities and is usually completed in parallel with the job walk down. A task flow chart and detailed hazard analysis are not required. The controls are developed based on the JHA (i.e., infrastructure requirements) and are usually not much more than "skill of the craft" with some specific precautions or routine controls identified (for example, lockout/tagout). A standard work package or procedure can be directly used or modified as the work control document.

No special reviews or assessments are usually required. The normal document review and approval process, including a safety evaluation, if required, is followed. An independent safety review and a readiness review/assessment could be required for low planning level activities. However, in some special cases they could be required based on regulatory requirements. The work activity is conducted

CHG-1

using the infrastructure requirements in place based on where the work is being performed. After the job is finished, closeout documentation is completed and submitted along with any feedback on the job. The results from this level of planning are documented (as required by the instructions) and become part of the work activity history file.

"Medium Planning Level" Work Control Process

A "medium planning level" work control process is applied when the scoring results from the ASF screen are between 16 to 40 points. This level of planning is usually applied when there are some significant hazards associated with the activity (or there is uncertainty about the hazards), the activity is somewhat complex, or the activity has not been performed by the project team at the Site. A project management plan and a team-based approach are required for this level of planning. The RM convenes a team composed of the appropriate SMEs, planners, and floor level workers to identify and analyze the hazards, and then determine the controls necessary to safely perform the activity.

The medium planning level uses a team-based work planning approach to enhance the quality of the decisions and judgments regarding the analysis of the hazards and the controls required to perform the work safely. The planning team consists of core team members familiar with the activity and subject matter experts in specific technical and safety disciplines. One of the first steps for the planning team is to review the work experience and lessons learned from previous jobs. The activity purpose and scope are then defined in several sentences or a few paragraphs and the project requirements (WBS and schedule) are usually somewhat detailed. A JHA checklist is required for this level of planning and is usually completed in parallel with the job walk down. Detailed hazard identification and analysis are performed as needed and at the discretion of RM/PM. The well-defined control set is developed based on the JHA and additional or more detailed hazard analysis (if performed). The need for additional controls is evaluated by testing the potential consequences against the proposed controls to determine if they are acceptable. The resultant integrated control set is graded to the level of hazards, the complexity of the work, and the uncertainty involved.

After the control set has been established, the work control documents are developed and can take the form of drawings and specifications, work packages, procedures, or other document types as defined in the SDRM. SME reviews, independent/peer reviews are performed, as needed or as required at the discretion of the PM. A safety evaluation is performed on the resultant work control documents, as directed by infrastructure procedures. In addition, an independent safety review and a readiness determination could be required based on regulatory requirements and infrastructure procedural requirements.

The work activity is conducted using the developed work control documents and infrastructure procedures in place based on where the work is being performed. After the job is finished, formal post-job review is conducted and then the closeout documentation is completed and submitted along with any feedback on the job. The job feedback and lessons learned can be formally documented at the discretion of the RM/PM. The results from this level of planning are documented (as required by the instructions) and become part of the work activity history file.

"High Planning Level" Work Control Process

A "high planning level" work control process is applied when the scoring results from the ASF screen are 41 points or greater. This level of planning is usually applied when there are significant hazards associated with the activity (or there is significant uncertainty about the hazards), and there is either significant activity complexity or the activity has never been performed by the project team at the Site. A project management plan and a team-based approach are required for this level of planning. Often, an activity requiring a high planning level will have multiple teams of individuals planning or working on

CHG-1

individual components for the activity, e.g., AB documents, Health and Safety Plans (HASPs), work packages, procedures, and training packages, etc. The RM/PM convenes a team composed of a team leader and the appropriate safety discipline and process SMEs, planners, operations specialists, and floor level workers.

The high planning level uses a team-based work planning approach to enhance the quality of the decisions and judgments regarding the analysis of the hazards and to provide a "justification of adequacy" related to the controls chosen to ensure that the work is performed safely. The planning team consists of core team members familiar with the activity and subject matter experts in specific technical and safety disciplines. One of the first steps for the planning team is to review the work experience and lessons learned from previous jobs. The activity purpose and scope are then defined in several paragraphs and the project requirements (WBS and schedule) are usually very detailed.

A JHA checklist is required for this level of planning and is usually completed in parallel with the job walk down. A task flow chart, along with task descriptions are required to be developed, but are more detailed than that required for the medium planning level. Detailed hazard identification and analysis (nuclear and non-nuclear) is required and the planning team is responsible for choosing the applicable hazard analysis tools and techniques to fit the job. The well defined control set is developed based on the JHA and the results from the consequence analysis and detailed hazard analysis. The need for additional controls is evaluated by testing the potential consequences against the proposed controls to determine if they are acceptable. The resultant integrated control set is graded to the level of hazards, the complexity of the work, and the uncertainty involved.

After the control set has been established, the work control documents are developed and can take the form of drawings, specifications, work packages, procedures, or other document types as defined in the SDRM. SME reviews and validations, independent reviews, and cross-table reviews are performed and documented, along with comment resolution. The cross-table review report is formally documented and approved by the Program Chief Engineer (PCE) for the organization performing the work. A safety evaluation, independent safety review and a readiness determination are performed as required by infrastructure procedures.

The work activity is conducted using the developed work control documents and infrastructure procedures in place based on where the work is being performed (Plan of the Day [POD], pre-evolution briefing [PEB], etc.). After the job is finished, formal post-job review is conducted and then the close-out documentation is completed and submitted along with any feedback on the job. The job feedback and lessons learned are formally documented and submitted with the close-out documentation.

The high planning level process is an iterative process that can require the team to go back and update planning tasks previously completed before the "final" integrated control set is completed (e.g., task flow chart, task descriptions, activity bounding conditions, specific task expectations, the hazards analysis). The results from this level of planning are formally documented (as required by the instructions) and become part of the work activity history file. The formally documented planning report is then reviewed and approved by the PCE for the organization performing the work.

CHG-1

This page intentionally left blank.

CHAPTER 3 - WORK PLANNING & HAZARD ANALYSIS PROCESS

1.0 PURPOSE

This chapter provides the instructions for the three levels of work planning, as determined by the ASF, and for performing the JHA required for all three levels of work planning. Additionally, this Chapter provides:

- Instructions and guidelines for conducting a more detailed IHA for highly complex or hazardous projects/activities
- A matrix of the roles and functions of the Site Safety Management Programs (SMPs) hazard assessment processes, procedural tools, safety evaluation/change control processes, and related documentation used within the SMPs to identify, employ, and integrate the specific hazard assessment programmatic requirements associated with these programs
- A description of the differences and similarities among Site SMP's hazard assessment processes
- A description of how various hazard assessment processes relate to one another including hierarchy, ranking, and graded approach used to determine prioritization of the selection and use

2.0 OVERVIEW

This chapter describes the three levels of planning for activities screened using the ASF. Each level requires that a job walk down and a JHA be performed to help the Planning Team understand the magnitude and intensity of the hazards involved in performing the work, and to help determine the level of controls required to perform the work safely.

Once the work activity scope has been defined and properly characterized, a JHA is performed for all planning levels. A JHA is a very useful tool to help the planners and workers focus on the hazards associated with performing the work activity. In its most simple form, the planning team identifies the potential hazards associated with the work scope during a pre-job briefing or pre-evolution for low hazard or minor maintenance work activities and establishes the required controls to prevent or mitigate the hazards. Somewhat more complex work processes require more thought and effort to identify and analyze the hazards that exist, and then to subsequently determine what controls are required. A checklist is useful to invoke a questioning process to ensure the hazards are not overlooked or unplanned. It might be necessary to perform additional job-walk downs and/or JHAs prior to completion of the WCD. Performing a JHA is an iterative process and may be re-visited many times during the planning phase and/or execution phase if new hazards are discovered.

The most complex or hazardous projects/activities require more thought and effort to identify and analyze the hazards that exist, and then to subsequently determine what controls are required. In those cases, a more detailed IHA is required. Appendix 3.5 provides instructions and guidance for conducting an IHA. Appendix 3.5 also provides a matrix of the various types of hazard assessment tools and techniques used at the Site.

3.0 GRADED WORK PLANNING PROCESS INSTRUCTIONS

Table 3-1 provides a matrix of the low, medium, and high planning process elements. This matrix provides a graded approach to planning commensurate with the types, levels, and

uncertainties in the hazards profile, the uncertainties surrounding the level of experience in the management team and project team, and the complexity and coordination that must be taken to ensure the work activity is performed safely.

The RM refers to Table 3-1 and executes the Planning Process Elements (marked with an "x") by the level of planning indicated. Appendices 3.1, 3.2, and 3.3 provide additional guidance on how to execute the Planning Process Elements. RMs are encouraged to expand the planning effort whenever it improves the quality of the planning.

- Consider the following key issues in performing activity planning for all levels of work planning:
 - Ensuring the activity is adequately characterized
 - Required Elements for Low, Medium, and High levels of planning.
 - Identifying SMPs/SMEs designated to analyze hazards and identify controls
 - Determining methodology for performing hazards assessments
 - Identifying and assessing the hazards
 - Identifying controls to prevent or mitigate the hazards
 - Developing and integrating the controls
 - Promulgating the controls into work control documents
 - Assessing feedback relative to work planning
- Perform all IHA and work planning using a graded approach to address the following elements. Guidelines for conducting an IHA are provided Appendix 3.5.
 - The relative impact to safety
 - The magnitude of any hazard involved
 - The life cycle stage of a facility
 - The programmatic mission and particular characteristics of the facility including regulatory compliance requirements
 - The verified design basis documentation available
- Ensure that the IHA and controls development provided in the planning process address:
 - Work Activity Definition
 - Characterization, Categorization, and Classification of Hazards
 - Identification of Scenarios of Concern
 - Evaluation of Consequences
 - Hazard Mitigation/Identification of Controls
 - Determination of the Acceptability of the Consequences
 - Documentation of the Assessment
- Ensure that the hazards assessments and work planning documents are maintained current and updated, as necessary, throughout the duration of the work activity. Ensure that work activity evaluations are performed for discovery issues as well as when change occurs in a facility disposition phase, work activity scope, or hazard. For example, this would include deactivation to long-term surveillance and maintenance (S&M) or when there is a change during a life cycle phase (such as building support utilities modification or termination during long-term S&M). The hazard baseline is reevaluated to assure that 1) new hazards or energy sources have not been introduced, and 2) assumptions and commitments associated with the hazard baseline are still valid.

1-547

Table 3-1, Matrix of Planning Process Elements - Graded to Level of Planning

PLANNING PROCESS ELEMENT	Level of Planning (Graded Approach)		
	Low	Medium	High
Review Work Experience and Lessons Learned (<i>previous jobs</i>)	X	X	X
Work Activity Purpose and Technical Scope / Statement of Work (SOW)	X	X	X
Job Hazard Analysis (JHA)	X	X	X
Work Activity/Job Walkdown	X	X	X
Develop Work Control Document(s) (<i>Procedure, Work Package Type 1, 2, etc.</i>)	X	X	X
Nuclear Safety Evaluation (<i>SES/USQD</i>)	X ¹	X ¹	X ¹
Independent Safety Review (<i>PRC/ORC</i>)	X ²	X ²	X ²
Readiness Determination (<i>Mgmt. Rev./RA/ORR</i>)	X ³	X ³	X ³
Project Management/Execution Plan (<i>Includes User Requirements, WBS, schedule, project resources, budget, barriers & constraints, etc.</i>) – required only for projects.		X	X
Identify and Form Work Planning Team (<i>Core Team and SMEs</i>)		X	X
Formal Post Job Review (<i>Includes Feedback & Lessons Learned – May be required for Low & Medium per Chapter 11</i>)			X
Work Activity/Hazard Characterization			X
Work Activity Flow Chart (<i>Work Tasks and Subtasks</i>)			X
Work Activity Task/Subtask Descriptions			X
Identify Controls			X
Work Activity Task/Subtask Expectations (<i>Controls</i>)			X
Integrated Hazards Assessment (Appendix 3.5)			X
Independent/Peer Review (Round-Table/Cross-Table)			X
Work Activity/Job Specific Training			X
Mockups / Dry runs / Drills / Emergency Response as required			X

¹ – Refer to NSM

² – Refer to 1-5200-ADM-02.01

³ – Refer to MAN-040-RDM

4.0 PLANNING TEAM MAKEUP AND MEMBER QUALIFICATIONS

The makeup of the Planning Team is dependent upon the uncertainty of the work activity, the hazards expected to be encountered during the performance of the work, and the complexity of the work activity. The ASF provides the RM with a first cut of the SMEs that **Should** be considered while establishing the Planning Team.

The RM generally selects a team of no less than two and typically no more than 12 people. These people have a combination of individual and collective experience and education so that they have expertise about the work activity under consideration. The team can include members from the primary and principal subcontractors, including floor-level workers and SMEs where appropriate, and where such inclusion is required, to reach quality decisions about safety and hazard controls. The combination of expertise on the team has the capability to:

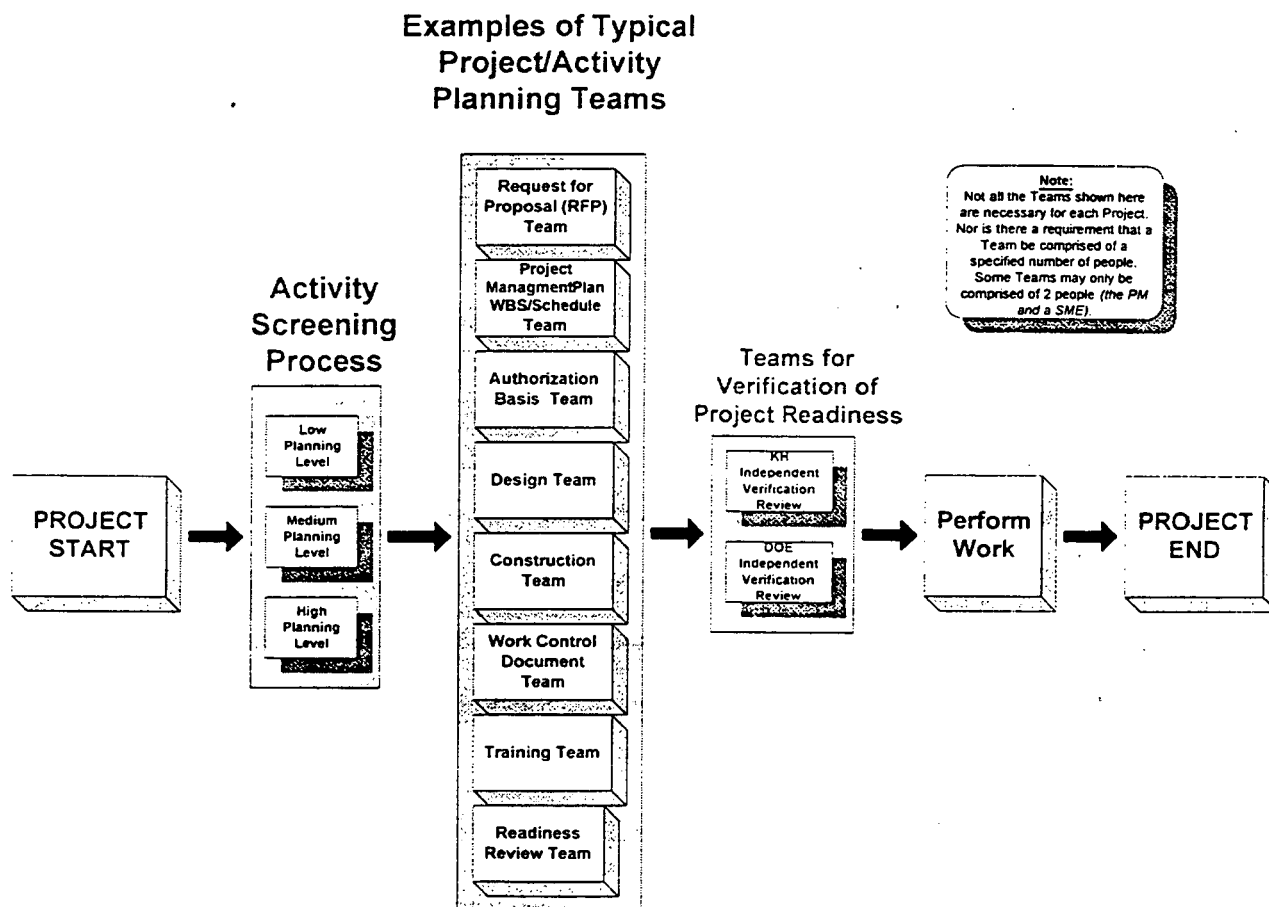
- Provide a detailed analysis of the hazards inherent in the work activity,
- Use the appropriate level of work planning (e.g., Low, Medium, and High) to establish an adequate set of controls for the safe performance of work, and,
- Based on the results of the hazards analyses, determine and express the controls in a way that can be communicated to those performing the work.

CHG-1
Depending on the rigor required for planning, the team may need to physically work together to take advantage of the synergism of the team; that is, the deliberations and decisions about the hazards, the analyses, and the selection of controls takes place while the team is together in one location.

Upon completion of the process, the team membership, deliberations, and decisions are documented and included in the work activity document files. Instructions for completing the Team Credentials Report is further discussed in Appendix 3.4 of this chapter.

In any given project, there could be more than one team necessary to plan the work. Figure 3-1 provides an overview of the various types of teams that could be established to ensure all the work associated with the work activity is adequately planned for and ready to be performed.

Figure 3-1 – TEAM RELATIONSHIPS



4.1 Work Planning Team Consensus/Dissenting Opinions

The following approaches **may** be used to reach consensus before and when a conflict arises:

- Define the criteria for team decision-making. That is, will it be a consensus decision where all must agree, majority rule, etc. Lack of a defining process to resolve conflicts could result in the team not reaching agreement.
- When a conflict arises, individually and jointly define the problem.
- Discuss individual needs and goals, team needs and goals, and not positions.
- Actively listen and be open-minded and flexible, keeping in mind individual and team needs and goals.
- Keep other perspectives in mind. Don't place blame, but rather, look for mutual benefits.
- Clarify differences, look for alternatives or options.

Agreement can be reached if members are willing to work through the issues. However, in cases where agreement cannot be reached, the decision-making process and criteria should have established the mechanism to reach consensus. In the case of a dissenting opinion, the opinion is documented and placed in the work document history file.

4.2 Work Planning Team Roles and Responsibilities

Some projects require multiple teams for specific or unique activities. In those cases where multiple teams are required, single points of contact should be identified as interface points between teams to disseminate information and to establish team hierarchy.

For each established team, the teams roles and responsibilities should be identified and documented to include the following:

- Identification of stakeholders
- Agreement on working schedules
- Management commitment to allow team members to participate
- Selection of team members for all aspects of the activity
- Priority of maintaining team continuity and minimizing team member turnovers
- Identification of training requirements/qualifications
- Identify specific roles and responsibilities for each team member
- Identify part-time SMEs for areas with weak coverage by full-time team members

CHG-1

APPENDIX 3.1 - PLANNING LEVEL INSTRUCTIONS

Low Planning Level

The RM **SHALL**:

- Select, as a minimum, a work planner to plan the work; and a floor level worker knowledgeable about the work, to perform the low planning level approach.

NOTE: *Based on the SMEs identified in the Hazard Profile Screen, the PM/RM can provide one or more of these additional SMEs to assist the work planner. The PM/RM also has the option of using a small or modified team-based approach to perform planning for activities that fall into the "low planning level" category.*

- Ensure that the controls, identified by the work planner and the individuals supporting the low planning level approach (including SMEs, if used), are incorporated in the appropriate work control document (procedure, work package, or engineering specifications or drawings) that are developed from Chapters 4 through 8.
- Review the lessons learned from previous applicable jobs, and complete the JHA in accordance with Appendix 3.2, JHA Instructions and perform the low planning level approach, ensuring that the required low planning level elements are addressed. Besides the supervisor and worker, additional safety discipline or process SMEs (identified from the Hazard Profile portion of the ASF can be utilized to perform this level of planning at the discretion of the work planner.

Medium Planning Level

The RM **SHALL**:

- Assign a Team Leader to form a Planning Team and approve the membership of the team by signing the Team Credentials Report.
- Ensure that the controls developed by the Planning Team are incorporated in the proper work control documentation (procedure, work package, test & inspection plan, or engineering specifications and drawings) that are developed from Chapters 4 through 8.

As part of the medium planning level approach, the Planning Team **SHALL** review the lessons learned from previous applicable jobs and complete the JHA for the major tasks in accordance with Appendix 3.2, JHA Instructions. Ensure the required planning elements are addressed.

High Planning Level

The RM **SHALL**:

- Assign a Team Leader to form a Planning Team and approve the membership of the team by signing the Appendix 3.4
- Ensure that an IHA is performed per Appendix 3.5
- Ensure that the controls developed by the Planning Team are incorporated in the proper work control documentation (procedure, work package, or engineering specifications or drawings) that are developed from Chapters 4 through 8.

CHG-1

As part of the high planning level approach, the Planning Team **SHALL** review the lessons learned from previous applicable jobs and complete the JHA for the major tasks in accordance with Appendix 3.2.

Flow Chart and Task Descriptions

The Planning Team **SHALL** develop a task flow chart for the activity being planned. List in sequential order on the Task-flow/Controls Table (Table A3-1) the major tasks required to perform the work, no more than one major task to a page. More than one page may be required to list all the sub-tasks associated with a particular high level task; each page should have the major task identified at the top.

Subtasks (first level) Descriptions

The Planning Team **SHALL**:

- List in sequence the first level subtasks required to perform the work, keeping in mind that the first level subtasks could require a second level of subtasks below them to adequately describe performance of the work. The objective of rendering the work flow into subtasks is to understand the components of the work in enough detail that the team can be assured that they understand the hazards associated with performing the work.

NOTE: *Each first level subtask has a number that consists of the major task number, the sequence number for the first level subtask, and a sequence number for the second level subtask, if any. For example, second level subtask number 3 of first level subtask number 2 of major task number 1 has a number that is 1.2.3.*

- Describe the tasks in sufficient detail that a person having a general knowledge of the scope of work could understand the steps being performed.

Subtasks (second level) Descriptions

The Planning Team **SHALL**:

- List, in sequence, the second level subtasks required to perform the work. Not all level one sub-tasks will require second level sub-tasks. The choice of whether second level subtasks are required or not depends on the team's judgment about the detail required to define the work flow so that the team can be assured that they understand the hazards associated with performing the work.
- Describe the tasks in sufficient detail that a person having general knowledge of the scope of work could understand the steps being performed. Each page of the Task-flow/Controls Table for a major task also includes the applicable first and second level subtasks, with "continued" pages as required.

Hazard Identification

The Planning Team **SHALL**:

- Review the results from the Hazard Profile Screen from the ASF (Block D-screen 2) completed as part of the ASF procedure, as a starting point for identifying all the hazards for the activity.
- Use the JHA in Appendix 3.2 to initiate identification of the hazards associated with each first and second level task and document the results in Table A3-1. The Team then decides if this is sufficient. If not, the team conducts an IHA, graded to the activity, and updates Table A3-1, as needed. Appendix 3.5 provides guidance and instruction on conducting an IHA.

- This step frequently must be repeated after conducting hazards analyses or assessments, or after any other activity that discloses additional hazards. The table **Should** be revised as frequently as necessary to reflect the best knowledge of the hazards associated with each task.

Hazard Analysis/Assessment

The Planning Team **SHALL**:

- Perform a hazard analysis/assessment for each step listed in Table A3-1, considering both normal and reasonably anticipated abnormal events and the following criteria:
 - Graded commensurate with the level of risk, hazard and consequence of the task(s) to be analyzed
 - Any pre-existing hazards analyses or safety analyses pertinent to the work under consideration (e.g.; Authorization Basis, Health and Safety Plan, Nuclear Safety Analyses, Auditable Safety Analyses)
 - Specific to the task(s) of concern
- Record the results of the hazards assessment/analyses on Table A3-2, Hazards Assessments Results. The "Controls Required" entry must also be recorded on Table A3-1 in the column labeled "Control for Hazard Consequence".
- Identify initiating events and potential mitigating systems failures ("what-if" scenarios) that could cause the hazard to produce undesirable consequences. Use team processes involving the whole team (e.g.; brainstorming) to optimize the determination of an adequate hazard evaluation
- Determine whether the identified scenarios for the activity fall within or outside the bounds of the analyzed condition of any applicable Authorization Basis by comparing the scenarios of concern to the bounding scenarios documented in the safety analysis of the Authorization Basis. If the scenarios of concern are not bounded by the safety analysis in the Authorization Basis or additional information/analysis is required, engage the appropriate Site organization(s) to perform additional or more detailed hazard analysis for the selected scenarios of concern. Include the following information as available:
 - Description of the scenario of concern (including initiating event)
 - Determination of the hazard and potential consequences
 - Determination of the receptor
 - Determination of the material-at-risk (MAR) and the release fraction
 - Determination of any other analysis variables of interest
 - Determination of the appropriate controls
- Some of the scenarios determined by the "what-if" technique could require extensive and complex analyses to determine the consequences and required controls (e. g., nuclear safety analyses, criticality safety analyses, chemical safety thresholds). The Planning Team determines when this is necessary and engages the appropriate qualified personnel to perform these analyses. The Team determines the proper controls from their consideration of the analyses and circumstances of performing the task.

Control Set Identification

The Planning Team **SHALL** record in Table A3-1 the control(s) for the hazard associated with each particular task from the hazard analysis documented in Table A3-2.

Implementing Document for Controls

The Planning Team **SHALL**:

- Identify documents that implement the control(s) required for each task. Some examples are procedures, operations orders, Safety Management Program processes (Radiological Work Permit, Health and Safety Plan, work packages, etc.).
- Review each document to ensure that the control(s) are adequately specified and implemented.
- If an existing document cannot be found, list a higher level standard or reference that addresses the required control. This greatly assists personnel in writing a new document to implement the control and assures that the control will be addressed properly.
- Record the implementing document or the reference or standard in the last column on Table A3-1.

Planning Document Preparation, Review and Approval

- After completing Tables A3-1 and A3-2, the planning team prepares a planning document that contains the results from all the steps performed for the high planning level approach (includes scope description, JHA, Team Credentials Report. The planning document is reviewed and signed by the entire planning team and additional SMEs (if used).
- The PM/RM convenes a team to perform an independent/peer review of the planning document using personnel who were not involved in the planning document preparation. The cross-table review team prepares a review report and submits it to the RM and the applicable PCE for review and approval. The team leader resolves and incorporates the cross-table review comments, prepares a final planning document, and submits the final planning document to the RM and then the to the PCE for review and approval.
- The PM/RM reviews the final planning document and indicates approval by signing.

[illegible]

APPENDIX 3.2 - JOB HAZARD ANALYSIS CHECKLIST

WCF No.:		Title/Description:		Specific Work Location:										
SME INVOLVEMENT														
1	Is any electrical, mechanical, hydraulic, chemical energy either stored or active available to energize the item being repaired or serviced and will workers be placed at risk of contacting uncontrolled energy sources?													
2	Will work be done on an energized electric circuit?													
3	Will this activity generate PCB ballasts?													
4	Will this activity generate PCB contaminated waste (excluding ballasts)?													
5	Does the task involve a confined space or an area that is a suspected confined space?													
6	Is the work activity likely to result in an inhalation or dermal exposure to dust, mists, vapors, gases, or fumes?													
7	Does the activity require the use of chemicals, or are chemicals present in the work area or to be brought into the area?													
8	Will the worker's eyes or skin be exposed to toxic or corrosive chemicals?													
9	Will the activity result in the generation of waste chemicals?													
10	Is the area posted as a high noise area or will the work activities result in an uncharacterized noise exposure?													
11	Will worker be exposed to environments that will be immediately hazardous to life and health or chemicals for which air purifying respiratory protection is inadequate (e.g., methylene chloride, nitric acid, carbon monoxide)?													
12	Will asbestos containing material (ACM) or possible asbestos containing material (PACM) be disturbed?													
13	Is work to include movement of heavy objects?													
14	Will worker be exposed to falling objects (e.g., construction area)?													
15	Are compressed gas cylinders or systems to be used?													
16	Are pressure vessels, systems and relief devices included in the work scope, or is there exposure to pressurized vessels other than gas cylinders in the vicinity of the work area that are not protected by compliant pressure devices?													
17	Is hoisting and rigging equipment to be used?													
18	Will the hoisting and rigging involve a Critical Lift?													
19	Will this activity involve excavations, trenching, drilling, geoprobe sampling or any other disturbances of soil to occur?													
20	Will the activity disturb an Individual Hazardous Substance Site (IHSS) and result in potential worker exposure to hazardous substances?													
		Yes	No	P	I	NI	NISS	ENG	RAD	Qual	CRIT	NS	ENV	FP

P = Checklist or Permit Required / R = Training Required / NI = Medical Monitoring
R = Required SME Involvement & Work Document Concurrence / R¹ = Required for High Planning Level Activities / R² = Required for Uncharacterized Noise Exposure
C = SME Contacted & Involved in JHA Development w/o mandatory work document concurrence. C¹ = Preliminary review/screen by discipline required.

CHG-1

APPENDIX 3.2 - JOB HAZARD ANALYSIS CHECKLIST

WCF No.:												Date:			
Specific Work Location:												SME INVOLVEMENT			
		Yes	No	P	T	M	H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP	
21	Is spark, flame, or heat producing work, to include welding, cutting and/or brazing to occur?			X	X		C							R	
22	If welding, cutting or brazing is to be performed, is the material to be worked on contaminated with either fixed or removable radioactive material, or does the work surface or area have a radiological history?			X	X		C		R						
23	Is beryllium to be handled or is beryllium contamination suspected and is worker inhalation exposure a potential during the work activities?				X	X	R			C			C		
24	Is work to be performed on domestic (potable) water lines?									R					
25	Are lead or lead containing products being cut, scraped, sanded or melted?				X	X	R								
26	Is work to be performed on batteries?				X		C								
27	Are explosives to be handled?						R								
28	Does the activity involve maintenance of a ventilation system or ducting where a fume hood or glove box was vented and the potential for an explosion may exist due to residual Perchlorates?						R								
29	Will an established and marked exit be blocked while work is being performed?						C							R	
30	Will ladders be used for this work?				X		C								
31	Is scaffolding required?				X		C								
32	Is fall protection required?				X		C								
33	Is a work platform to be used?						C								
34	Is the work being performed on a roof?				X		C								
35	Are pinching hazards and/or sharp edges present?						C								
36	Are ergonomic hazards present?				X		R								
37	Do temperature extremes exist?					X	R		C ¹						
38	Will the activity involve any penetrations into concrete surfaces?				X		C	R	C ¹	R					
39	Concrete Penetration: Is the material in a radiologically posted area or will the concrete penetration protrude into a radiologically controlled area?			X	X				R						
40	Concrete Penetration: Is there record, evidence or suspicion that the concrete material could have come in contact with radioactive material?			X	X				R						
41	Concrete Penetration: Has the surface been treated in any way such that absorbed contamination could be hidden (e.g., painted, scabbled, or other decon efforts)?			X	X				R						
42	Does this activity involve a Configuration Change as defined by DES-210?							R	R	R	C				
43	Does the activity involve movement, interaction or removal of fissile material?				X	X	C		R		R	R			
44	Is spark, flame, or heat producing work, to include welding, cutting, and/or brazing, to occur in a nuclear facility?			X			C		R			R		R	
45	Are flammable/explosive gases involved in or required for the work in a nuclear facility?						C		R			R		R	

P = Checklist or Permit Required / T = Training Required / M = Medical Monitoring
 R = Required SME Involvement & Work Document Concurrence / R¹ = Required for High Planning Level Activities / R² = Required for Uncharacterized Noise Exposure
 C = SME Contacted & Involved in JHA Development w/o mandatory work document concurrence. C¹ = Preliminary review/screen by discipline required.

CHG-1

APPENDIX 3.2 - JOB HAZARD ANALYSIS CHECKLIST

WCF No.:												Date:					
Specific Work Location:												SME INVOLVEMENT					
		Yes	No	P	T	M	H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP			
46	Does the activity involve removal of equipment, ducts, piping, gloveboxes, plenums or tanks from a radioactive area?			X	X		C		R		R	R					
47	Will a new process or equipment be introduced which will be used for radioactive materials?			X	X				R		R	R					
48	Is the work being conducted in a posted Radiation Area (RA)?			X	X				R								
49	Is the work being conducted in a posted High Radiation Area (HRA)?			X	X				R								
50	Is the work being conducted in a posted Very High Radiation Area (VHRA)?			X	X				R								
51	Is the work conducted in a posted Contamination Area?			X	X				C ¹								
52	Is the work being conducted in a posted High Contamination Area (HCA)?			X	X				R								
53	Is the work conducted in a posted airborne radioactivity area or cause an increase in the radiation levels in immediate or surrounding areas?			X	X	X			R								
54	Are the airborne contamination levels unknown?			X	X	X			R								
55	Has the area <u>ever</u> been designated as a radiological area?			X	X				C ¹								
56	Does the area's history indicate a past presence of radioactive materials or operations?			X	X				R								
57	Is there a potential for the activity to release radioactive material to the air through mechanical, chemical or other means?			X					R				R				
58	Does the area contain, or is it bounded by any radiological postings, barriers, signs or labels?			X	X				R								
59	Will the activity involve the transfer, pumping, or draining of radioactive or radioactively contaminated liquids?			X					R								
60	Does the work activity involve equipment containing a sealed radioactive source or on equipment capable of generating radiation?			X	X				R								
61	Does the work involve penetration into systems, or surfaces containing or suspected of containing radioactive materials or contamination?			X	X				R								
62	Does the work involve removal or addition of adequate shielding?								R								
63	Is the work being conducted in a soil contamination area?								R								
64	Will the work involve excavation in an area adjacent to an under-building contamination area?								R								
65	Will pyrophoric material be handled, processed, or encountered during the work activity?								R					R			
66	Does the activity involve soil probing or well installation?								R				C				
67	Will there be a new air emission or a change in the quantity of an existing air emission (including radionuclide NESHAP)?												R				
68	Will the activity generate or does it have the potential to generate fugitive emissions or releases of air pollutants or hazardous substances to the air?			X									R				
69	Will there be a release or discharge, or is there the potential of a release or discharge to soil or surface waters such as streams, wetlands (marshy or boggy areas), storm drains, or ponds? (This includes releases to sanitary and process sewers.)												R				
70	Will this activity result in the disturbance of wetland soils, surface water flow, or vegetation?				X								R				

P = Checklist or Permit Required / T = Training Required / M = Medical Monitoring

R = Required SME Involvement & Work Document Concurrence / R¹ = Required for High Planning Level Activities / R² = Required for Uncharacterized Noise Exposure

C = SME Contacted & Involved in JHA Development w/o mandatory work document concurrence. C¹ = Preliminary review/screen by discipline required.

CHG-1

APPENDIX 3.2 - JOB HAZARD ANALYSIS CHECKLIST

WCF No.:												Date:		
Specific Work Location:		SME INVOLVEMENT												
		Yes	No	P	T	M	H&S	ENG	RAD	Qual.	CRIT	NS	ENV	FP
71	Will this activity include work in a Preble's Meadow Jumping Mouse habitat, or will the activity disturb migratory or protected birds?												R	
72	Is the activity perceived to have any impact or potential impact (beneficial or negative) on the environment?			X									R	
73	Is this work activity being conducted in accordance with a Decommissioning Operations Plan (DOP), a Proposed Action Memorandum (PAM), an Interim Measures/Interim Remedial Action (IM/IRA) document, consent orders, Federal Facility Compliance Agreements (FFCA), or other CERCLA decision document under the Rocky Flats Cleanup Agreement (RFCA)?						R						R	
74	Will this activity install, modify, move, or impact an Underground Storage Tank (UST)?				X		R		C ¹				R	
75	Will this activity install, modify, move, or impact an Aboveground Storage Tank (AST)?				X		R		C ¹				R	
76	Will this activity modify a PCB storage facility (e.g., berms or flooring)?				X								R	
77	Will this activity modify a current RCRA-regulated hazardous waste unit, relocate all or part of a unit, or otherwise impact a unit?				X		R						R	
78	Does the activity include closure of a RCRA hazardous waste unit?				X	X	R						R	
79	Will this activity generate a liquid sanitary waste (non-radioactive, non-hazardous aqueous waste)?				X		C						R	
80	Will this activity generate solid sanitary waste, which falls into the category of "special sanitary wastes"?				X		C						R	
81	Will this activity generate solid sanitary waste (excluding prohibited items)?				X		C		C ¹				R	
82	Will this activity generate hazardous, radioactive or mixed waste?				X		C		R				R	

P = Checklist or Permit Required / T = Training Required / M = Medical Monitoring

R = Required SME Involvement & Work Document Concurrence / R¹ = Required for High Planning Level Activities / R² = Required for Uncharacterized Noise Exposure

C = SME Contacted & Involved in JHA Development w/o mandatory work document concurrence. C¹ = Preliminary review/screen by discipline required.

APPENDIX 3.2 - JOB HAZARD ANALYSIS CHECKLIST

WCF No.:	Title/Description:	Date:
Company/Organization	Location:	Department:
Sequence of Basic Job Steps	Potential Hazard (from Checklist)	Required Controls
Team Leader (Name / Signature / Date)	Planner (Name / Initials / Date)	H&S (Name / Initials / Date)
Engineer (Name / Initials / Extension / Pager)	RadCon (Name / Initials / Date)	Quality Control (Name / Initials / Date)
Criticality Engineer (Name / Initials / Date)	Nuclear Safety (Name / Initials / Date)	Environmental (Name / Initials / Date)
Fire Protection (Name / Initials / Date)	Lead Craft / Operator (Name / Initials / Date)	Other (Name / Initials / Date)

APPENDIX 3.2 - JOB HAZARD ANALYSIS CHECKLIST

INSTRUCTIONS

NOTE: *When an automated JHA tool has been approved for use by the IWCP Program Manager, it may be used in place of the JHA checklist in this Appendix.*

NOTE: *The Work Planner acts as the Team Leader for those activities performed using the "low" planning level.*

NOTE: *Every effort should be made to involve the floor-level worker who will be performing the work activity with the JHA development.*

The Team Leader **SHALL** establish the planning team. This is determined based on the planning requirements annotated on the WCF and the instructions for the level of planning outlined in Chapter 3.

NOTE: *It is important for the Planning Team to have a thorough understanding of the job scope prior to performing the Hazard Analysis process. This will help the team identify the hazards associated with the work, along with the work steps and methods for controlling the hazards.*

The Planning Team **SHALL**:

- Perform a walk down of the job site to identify all hazards present, along with the expected hazards based on the work scope. The SMEs identified on the JHA checklist as "Required" with the corresponding hazard **SHALL** also be members of the planning team, if not previously identified.
- Complete the checklist portion of the JHA by answering all of the questions either YES or NO depending on the hazards present.

NOTE: *The Job Hazard Analysis Guide in Appendix 3.3 is used to assist in identifying the control measures for the identified hazards.*

- Complete the worksheet portion of the JHA per Appendix 3.3.

Upon completion of the JHA, all members of the Planning Team **SHALL** enter their name, initials, and date in the space provided.

The Team Leader **SHALL** approve the JHA by signing the checklist in the space provided.

1-297

APPENDIX 3.3 - INSTRUCTIONS FOR COMPLETING JHA WORKSHEET

The JHA Worksheet is an important accident prevention tool that works by finding hazards and eliminating or minimizing them before the job is performed, and before they have a chance to become accidents. Use this analysis for informing employees of specific job hazards and protective measures.

Before filling out this form, consider the following: The purpose of the job - What has to be done? Who has to do it? The activities involved - How are they done? When are they done? Where are they done?

In summary, to complete this form you should consider the purpose of the job, the activities it involves, and the hazards it presents.

SEQUENCE OF BASIC JOB STEPS	POTENTIAL HAZARDS	RECOMMENDED CONTROLS
<p>Examining a specific job by breaking it down into a series of steps or tasks will enable you to discover potential hazards employees may encounter.</p> <p>Each job or operation will consist of a set of steps or tasks. For example, the job might be to move a box from a conveyor in the receiving area to a shelf in the storage area. To determine where a step begins or ends, look for a change of activity, change in direction or movement.</p> <p>Picking up the box from the conveyor and placing it on a hand truck is one step. The next step might be to push the loaded hand truck to the storage area (a change in activity). Moving the boxes from the truck and placing them on the shelf is another step. The final step might be returning the hand truck to the receiving area.</p> <p>List <i>all</i> the steps needed to perform the job. Some steps may not be performed each time; an example could be checking the casters on the hand truck. However, if that step is generally part of the job, it should be listed.</p>	<p>A hazard is a potential danger. The purpose of the analysis is to identify ALL hazards - both those produced by the environment or conditions and those connected with the job procedure.</p> <p>To identify hazards, complete the JHA Checklist and ask yourself these basic questions about each step:</p> <ul style="list-style-type: none"> • Is there a danger of the employee striking against, being struck by, or otherwise making injurious contact with an object? • Can the employee be caught in or between objects? • Is there potential for slipping, tripping, or falling? • Could the employee suffer strains from pushing, pulling, lifting, bending, or twisting? • Is the environment hazardous to safety and/or health (toxic gas, vapor, mist, fumes, dust, heat, or radiation)? • Close observation and knowledge of the job is important. Compiling an accurate and complete list of potential hazards will allow for the development of safe job procedures needed to prevent accidents. 	<p>Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the hazards that could lead to an accident, injury, or occupational illness.</p> <p>Begin by trying to: 1) engineer the hazard out; 2) provide guards, safety devices, etc.; 3) provide personnel protective equipment; 4) provide job instruction training; 5) maintain good housekeeping; 6) ensure good ergonomics (positioning the person in relation to the machine or other elements in such a way as to improve safety).</p> <p>List the recommended safe operating procedures. Begin with an action word. Say exactly what needs to be done to correct the hazard, such as, "lift using your leg muscles." Avoid general statements such as, "be careful."</p> <p>List the required or recommended personnel protective equipment necessary to perform each step of the job.</p> <p>Give a recommended action or procedure for each hazard.</p> <p>Serious hazards should be corrected immediately. The analysis should then be changed to reflect the new conditions.</p> <p>Finally, review the input on all three columns for accuracy and completeness. Determine if the recommended actions or procedures have been put in place. Re-evaluate the JHA as necessary.</p>

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE
Page 1 of 13

QUESTION	SITE/FACILITY INFORMATION
1 Is any electrical, mechanical, hydraulic, chemical energy either stored or active available to energize the item being repaired or serviced and will workers be placed at risk of contacting uncontrolled energy sources?	<p>Evaluate methods to de-energize the source of hazardous energy, complete the required permit, follow all requirements to ensure the system is de-energized, and install LO/TO per 1-15320-HSP-2.08. Ensure the process is in place to re-energize the system safely prior to removing the LO/TO.</p> <p><u>Training:</u> For those workers who are at risk of electrical shock, Electrical Safety for Non-Electrical Workers initial training (059-178-01/1.1) and biennial requalification (059-178-01/1.2) is required.</p>
2 Will work to be done on an energized electric circuit?	<p>Employees, including electricians, welders, their supervisors and all employees and their supervisors whose work brings them close enough to exposed parts of energized electrical circuits operating at 50V or more to ground for a hazard to exist, shall be familiar with safety-related work practices.</p> <p>Electric Circuit - the loop of current-carrying conductors from a source of voltage to a load and back to the same source of voltage. The circuit should be de-energized and LO/TO applied per HSP 2.08. If the circuit must be worked energized, an Energized Electrical Work Permit must be completed.</p> <p>Polychlorinated Biphenyl (PCB) under various trade names remains a hazard when work is done on old transformers. HSP-15.00</p>
3 Will this activity generate PCB ballasts?	<p>If the building does not have a WGI for waste generated by this activity, contact Environmental for guidance.</p> <p><u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific Waste Handling training and qualifications.</p>
4 Will this activity generate PCB contaminated waste (excluding ballasts)?	<p>If the building does not have a WGI for waste generated by this activity, contact Environmental for guidance.</p> <p>Sampling will determine if the PCB contaminated waste contains greater than 50 ppm of PCB's.</p> <p>Contact Environmental to ensure that drums are immediately entered into WEMS to immediately begin tracking the drums against the disposal/destruction time limits.</p> <p><u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific Waste Handling training and qualifications.</p>
5 Does the task involve a confined space or an area that is a suspected confined space?	<p>Evaluate each potential space as a confined space (based on the definition below) if work activities are being performed. Normally occupied rooms and areas of general occupancy do not have to be evaluated, however spaces or areas that have not been occupied for a large period of time and have been isolated should be evaluated. If a question arises consult an H&S professional for interpretation. K11 Safety and Industrial Hygiene will maintain a database identifying known confined spaces at the Site.</p> <p>A confined space is defined as a space that:</p> <ul style="list-style-type: none"> • Is large enough and so configured that an employee can bodily enter and perform work; and • Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, and pits); and • Is not designed for continuous employee occupancy. <p>A confined space may be posted as a permit required confined space or a non-permit confined space.</p> <p>A permit confined space requires air sampling by H&S and Fire Department approval of emergency retrieval system prior to entry. 1-E36-HSP-6.04</p> <p><u>Training:</u> Confined Spaces have the potential for many hazards. The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (1-S52-T&Q-TR-004).</p>

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE
Page 2 of 13

Question	Site/Facility Information
6 Is the work activity likely to result in an inhalation or dermal exposure to dust, mists, vapors, gases, or fumes?	<p>Contact your company H&S representative to assist in the analysis of exposure and to determine the appropriate controls. Engineering and/or administrative controls shall be the first choice to control potential employee exposures. If engineering or administrative controls are not feasible, respiratory protection shall be selected in accordance with 1-N07-HSP-7.03 and 1-N07-HSP-7.05</p> <p>Training: Specific training requirements shall be determined during the work planning phase and based on the hazards analysis. Training for hazard communication and respiratory protection may be necessary in addition to compound specific training (lead, asbestos, or beryllium) Refer to Table I of the Training Requirements Procedure</p>
7 Does the activity require the use of chemicals or are chemicals present in the work area, or to be brought into the area?	<p>A chemical is any compound, mixture or element that requires a Material Safety Data Sheet (MSDS) according to HSP 9.07 and 29 CFR 1910.1200. Chemicals are generally industrial chemical products, which have the potential for causing occupational exposures. As a general rule, properly stored and maintained chemicals do not pose a problem. Materials brought into an area for a specific task may present a problem due to incompatibility with chemicals already present.</p> <p>An MSDS must be readily available for any chemical, which will be used during the activity (HSP 9.07).</p> <p>If chemicals are to be brought into the area, review the MSDS' for these chemicals. If chemicals are present in the area, discuss with the Chemical Control Administrator (CCA) or H&S any precautions that may be necessary because of the new chemicals being introduced into the area.</p> <p>Prior to procuring any new chemicals, contact the Chemical Dispensary to determine if excess inventory of the chemical is available on Site. Chemicals ordered or intended for use during the activity must have a bar-code, must be on the Chemical Dispensary/Integrated Chemical Management System (CD/CMS), and must be tracked from the start of the activity to the close of the activity per the requirements of the Chemical Management Manual, 1-MAN-019-CMM-001. Every effort should be made to use non-hazardous chemicals or chemicals which will result in waste not considered RCRA regulated hazardous waste.</p> <p>Refer to the Chemical Management Manual, 1-MAN-019-CMM-001.</p>
8 Will the worker's eyes or skin be exposed to toxic or corrosive chemicals?	<p>Eye protection will be required based on the following criteria:</p> <ul style="list-style-type: none"> Class I Eye Protection - Safety glasses with sideshields for protection against impact particles (e.g., saw dust from a cut off saw) or innocuous mists (water over spray from dish washer rinsing). Class II Eye Protection - Safety glasses with a full-face shield for protection against impact particles, e.g. grinding wheel particles. Class III Eye Protection - Chemical goggles and a full-face shield for protection against chemical dusts, liquids, and gasses. Class IV Eye Protection - Special work protection as require in welding and laser operations. <p>All eye protection must conform to ANSI Z87.</p> <p>1-62300-HSP-7.01</p> <p>PPE will be provided and selected based upon the ability to protect against the hazardous or toxic material. Careful evaluate of latex products should be included to prevent occurrence of latex allergy reactions.</p> <p>Showers and eyewashes shall be provided where potential injurious materials, such as corrosives, acids, oxidizers, reactants, and volatiles, are handled, used or dispensed. They are to be within 100 feet traveling distance from the hazard. Battery charging stations the distance is reduced to 25 feet.</p> <p>1-B93-HSP-7.04 & HSP-13.05.</p>
9 Will the activity result in the generation of waste chemicals?	<p>A waste chemical is an unused substance previously used in mission processes or maintenance activities which is no longer required by the owner to support current operations (e.g., has no future intended use) and has been declared a waste by the owner (e.g., waste paint or epoxy).</p> <p>Training: Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications.</p>

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE
Page 3 of 13

Question	Site/Facility Information
10 Is the area posted as a high noise area or will the work activities result in an uncharacterized noise exposure?	Evaluate the use of engineering or administrative controls to reduce the noise levels associated with the work activities. Provide training in the health effects of high noise exposure and the OSHA standard. Use hearing protection. If area is not posted as a high noise area, but seems noisy, contact H&S for guidance and evaluation if necessary. I-187-HSP-7.06
11 Will worker be exposed to environments that will be immediately hazardous to life and health or chemicals for which air purifying respiratory protection is inadequate (e.g., methylene chloride, nitric acid, carbon monoxide)?	Contact H&S for guidance. I-F13-HSP-7.05 Training: The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
12 Will asbestos containing material (ACM) or possible asbestos containing material (PACM) be disturbed?	Asbestos has been used in a great variety of products. Some items that may contain asbestos are; wire insulation, filler in plastics, wall sizing, continuous pour concrete walls, cement blocks, roofing felt, floor tiles, adhesives, acoustical ceiling tile, building siding, paint, cloth for fire blankets, curtains and drapes, and general insulation materials. The following controls must be followed: <ul style="list-style-type: none"> • If greater than 25 linear feet of TSI (Thermal System Insulation) or 10 square feet of TSI or surfacing ACM and PACM, is to be removed, a separated decontamination station must be established. • If greater than 260 linear feet of TSI, 160 square feet of TSI or surfacing ACM or PACM or the volume equivalent of one 55 gallon drum, a separate decontamination station must be established and a state permit is required. If PACM, consult H&S and Facility Management for the status of the material. If a facility characterization does not exist or the Facility Manager indicates material is uncharacterized, request assistance from H&S to characterize. I-62200-HSP-9.09 & CO Reg. #8 E. Std. Asbestos Training: Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (I-S52-T&Q-TR-004) for specific Waste Handling training and qualifications. Only CDPH&E Certified Asbestos Workers can perform asbestos abatement.
13 Is work to include movement of heavy objects?	Consult H&S for an ergonomic evaluation and PPE requirements.
14 Will worker be exposed to falling objects (e.g., construction area)?	Head protection will be required. HSP-7.07
15 Are compressed gas cylinders or systems to be used?	Compressed gas is gas that is stored and used at pressures greater than normal atmospheric pressure (15 psia); supplied to users in cylinders or through piping systems. Contact H&S for review because some compressed gases have specific storage, ventilation and piping requirements. I-62300-HSP-11.01 Compressed Gas Assoc.
16 Are pressure vessels, systems and relief devices included in the work scope, or is there exposure to pressurized vessels other than gas cylinders in the vicinity of the work area that are not protected by compliant pressure devices?	Cylinders and pressure vessels; interconnecting hardware (including piping and tubing); instrumentation, and devices such as valves pressure relief equipment that contains fluids (liquids and gases) operating at pressure greater than nominal atmospheric pressure (15 psia) are included. Minimize the number of personnel in the work area, and reduce exposure time in the area to that required for actual work task accomplishment. Unless like-for-like replacement or repair is being done contact H&S and Engineering for assistance. I-62300-HSP-11.03 Contact Environmental if work is to be performed outside for proper evaluation of air emissions. Contact Quality for all maintenance and/or replacement of pressure relief valves.

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE
Page 4 of 13

Question	Site/Facility Information
17 Is hoisting and rigging equipment to be used?	<p>Hoisting Equipment, a general term used to indicate cranes or suspended machinery that is used for lifting or lowering a freely suspended, unguided load. Hoisting equipment is generally considered to be located above the hook to which rigging equipment or accessories are attached.</p> <p>Rigging Equipment, a general term used to indicate material handling devices such as slings (all types) or structural, mechanical, vacuum, or magnetic below-the-hook lifting devices used for lifting and moving material with hoisting equipment. Rigging equipment does not include those devices defined as rigging accessories.</p> <p>Rigging Accessories, a general term used to indicate devices used in conjunction with hoisting and rigging equipment, such as shackles, eyebolts, turnbuckles, or load-indicating devices.</p> <p>The equipment access shall be direct and the path of lift clear of obstructions and electric power lines.</p> <p>1-K71-HSP-12.02 Hoisting Manual</p>
18 Will the hoisting and rigging involve a Critical Lift?	<p>A lift shall be designated as a critical lift if collision, upset, or dropping could result in any one of the following:</p> <ul style="list-style-type: none"> ◦ Damage that would result in unacceptable delay to schedule or other significant program impact, e.g., loss of vital data. ◦ Significant release of radioactive/other hazardous material or other undesirable conditions. ◦ Unacceptable risk of personnel injury or significant adverse health impact (on-site or off-site). ◦ Undetectable damage that would jeopardize future operations or the safety of a facility. <p>NOTE: A lift should also be designate as critical if the load requires exceptional care in handling because of size, weight, close-tolerance installation, high susceptibility to damage, or other unusual factors.</p> <p>A Lift Plan will be required.</p> <p>1-K71-HSP-12.02, Hoisting Manual</p>
19 Will this activity involve excavations, trenching, drilling, geoprobe sampling or any other disturbances of soil to occur?	<p>A Soil Disturbance Request and an Excavation Permit will be required.</p> <p>1-B37-HSP-12.08</p> <p>Read and follow the Radiological Work Permit (RWP), if required.</p> <p>Rad Engineering shall assess the need for posting and work control requirements.</p> <p>Complete requirements of the Environmental Approval Process procedure for Construction/Excavation Activities (1-F20-ER-EMR-EM.001). Complete the Hazardous Waste Determination Form found in this procedure.</p> <p>Prior to returning the removed soil to the excavation, ensure that the soil has been sampled, as necessary, and that the soil to be replaced is evaluated in accordance with the containment concentrations identified in the Rocky Flats Cleanup Agreement (RFCA), when applicable.</p> <p>K-H Environmental written approval is required for all soil dispositions where radiological constituents exceed background, or hazardous constituents at any contamination level is involved.</p> <p>Training: Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (1-S52-T&Q-TR-004).</p>

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE

Page 5 of 13

Question	Site/Facility Information
20 Will the activity disturb an Individual Hazardous Substance Site (IHSS) and result in potential worker exposure to hazardous substances?	Contact H&S & Rad Engineering for guidance. An IHSS is used at RFETS as a single term which combines CERCLA remediation and RCRA corrective action units. IHSS-specific considerations must be incorporated into the radiological determinations for soils and structures within IHSS'. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (1-S52-T&Q-TR-004).
21 Is spark, flame, or heat producing work, to include welding, cutting and/or brazing to occur?	Ensure proper hot work permit is implemented. Proper grounding of electric equipment, guarding from flash and slag, engineering controls and special Personal Protective Equipment (PPE) are necessary Contact Engineering and Quality, if welding is to be coded welding. Also ensure all Welders are qualified to perform coded welding per SM-126.
22 If welding, cutting or brazing is to be performed, is the material to be worked on contaminated with either fixed or removable radioactive material, or does the work surface or area have a radiological history?	Contact Rad Safety to assess RWP needs. Fire retardant Anti-C's shall be specified on Hot Work Permit as necessary based on the analysis of the work hazards. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (1-S52-T&Q-TR-004).
23 Is beryllium to be handled or is beryllium contamination suspected and is worker inhalation exposure a potential during the work activities?	Contact H&S for guidance.
24 Is work to be performed on domestic (potable) water lines?	All equipment will require disinfection prior to coming in contact with potable water. Only Certified CDI Technicians are allowed to perform work on Domestic Water Backflow Preventers. 1-15310-HSP-13.06 Notify Bldg. 124 Operations (Raw Water Treatment Plant) that work is being performed on a Domestic Water Line.
25 Are lead or lead containing products being cut, scraped, sanded or melted?	Contact H&S for guidance.
26 Is work to be performed on batteries?	Many types and sizes of batteries are used at Rocky Flats. Emphasis is placed on flooded cell and sealed valve regulated batteries. These two types of batteries and battery systems have both chemical and electrical hazards. During charging of these batteries, hydrogen is generated. Hydrogen produces an explosive atmosphere that can be easily detonated. Ventilation of such an area is important. Review type of battery (wet or dry electrolyte) and associated hazards. PPE: Class III Eye Protection & Gloves
27 Are explosives to be handled?	Only properly trained personnel are to handle explosives. HSP-19.03
28 Does the activity involve maintenance of a ventilation system or ducting where a fume hood or glove box was vented and the potential for an explosion may exist due to residual Perchlorates?	Perchloric acid was used in fume hoods for metal analysis. The mists from the digestion process left residual perchlorate on the walls of the duct work. Once evaporated perchlorate crystals may remain on the walls of the duct work. Perchlorate crystals are shock sensitive and may detonate if disturbed. Evaluate lessons learned and processes from the Building 123 demolition. Contact H&S for guidance.

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE

Page 6 of 13

Question	Site/Facility Information
29 Will an established and marked exit be blocked while work is being performed?	Contact H&S to evaluate and help establish alternative exits. Must also be reviewed by Fire Protection and Shift Superintendent. HSP-22.01
30 Will ladders be used for this work?	All ladders on plant site must be site approved and in good condition. Metal ladders are not to be used for electrical work. If a step ladder will be used, the step ladder must be fully opened on a firm level surface. The employee is not to stand above the third step from the top. If a straight ladder will be used, and the employee will be required to use two hands to perform the task while on the ladder or the time on the ladder exceeds one hour, another method of positioning the employee is recommended (e.g., manlift). If the path to raise the ladder is clear of obstructions, the worker's time on the ladder is under one hour and a tie-off point is available, a straight ladder is an acceptable choice.
31 Is scaffolding required?	Scaffolds are elevated temporary work surfaces (platforms) used to support workers in construction and maintenance tasks. Work requiring long periods of work on ladders, handling of heavy objects or the need of two or more persons at the job site, scaffolding is recommended. Trained supervision and carpenters erect the scaffolding. If problems are encountered, contact H&S. I-B54-HSP-22.03
32 Is fall protection required?	Fall protection is required for: fall hazards of six feet or more, fixed ladders greater than 20 feet not having cages, employees using both hands at an elevated work station, use in vehicle-mounted aerial platforms, where fixed fall protection such as guardrails, ladders and scaffolding is missing and on roofs within 6 feet of the edge. Review of HSP 22.05 and 29CFR1926.66 is required to determine type of fall protection applicable and equipment requirements.
33 Is a work platform to be used?	Work platforms are self and manually propelled, vehicle-mounted, elevated and/or rotating work platforms. Equipment is to be inspected on site, personnel receive special training, and maintenance schedule is current. HSP-22.06 Training: If using a bucket truck, Bucket Truck training is required for Alarm Techs and Lineman Bucket Truck Training is required for Linemen.
34 Is the work being performed on a roof?	A roof is the exterior surface on the top of a completed building. Low-slope roof means a roof having a slope less than or equal to a four foot rise in twelve horizontal feet with unprotected sides and edges six feet or more above lower levels. Employees shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems, or a combination of warning line system and guardrail system, or warning line system and personal fall arrest system, or warning line system and safety monitoring system. Steep roof is a roof having a slope greater than four feet rise in twelve horizontal feet with unprotected sides and edges six feet or more above lower levels. Employees shall be protected from falling by guardrail systems with toeboards, safety net systems, or personal fall arrest systems. NOTE: If pitch or tar is to be used, request an MSDS. If the pitch or tar contains cresol or related compounds, additional PPE will be required. Exception: The provisions for this subpart do not apply when employees are making an inspection, investigation, or assessment of workplace conditions prior to the actual start of construction work or after all construction work has been completed. Employees should pay particular attention to high wind warnings before working on a roof. 29 CFR 1926.500 to 503
35 Are pinching hazards and/or sharp edges present?	Use engineered controls or PPE (e.g., leather or Kevlar™ gloves) to reduce or eliminate this problem.

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE
Page 7 of 13

Question		Site/Facility Information
36	Are ergonomic hazards present?	<p>Ergonomic Hazard, a physical state of the work environment which is incompatible with the physical or psychological capabilities and limitations of people and which may cause injury to employees. Ergonomic hazards include but are not limited to :</p> <ul style="list-style-type: none"> • Repetitive motion of body parts required to perform work. • Excessive force applied and required to perform work. • Awkward body postures required to perform work. • Static body postures while performing work. • Contact stress on body parts while performing work. • Vibration of equipment, tools, or work environment. • Work systems which do not make reasonable accommodations for the physical limitations of qualified employees who are disabled. • Work systems which are incompatible with individual employee anthropometry (i.e., the study of human body measurements on a comparative basis to the job being performed). <p>Look for alternate locations to perform work, alternate equipment, or limit time an employee performs a given task. For assistance, contact H&S. 1-P44-HSP-13.09</p>
37	Do temperature extremes exist?	<p>Heat stress results from the body being prevented from releasing sufficient heat to maintain proper body temperature. This can be caused by working in a hot environment or wearing of PPE. Each case must be individually evaluated by H&S. Any extreme work conditions should be reviewed.</p> <p>During hot weather, be aware of signs of heat stress or exhaustion. Drink plenty of fluids.</p> <p>Cold stress results from exposure to low temperatures without the proper clothing or protection. Cold stress must be given consideration during the winter months when outside work is to be performed. Besides outside work during the winter months, some unusual conditions exist as work inside a large freezer.</p> <p>During cold weather, dress appropriately and watch for signs of hypothermia.</p>
38	Will the activity involve any penetrations into concrete surfaces?	<p>Review facility drawings, conduct visual inspection and "utility locate" or identify the steps in IWCP WP that specify activities/equipment involved, potential hazards and proactive measures. All power tools or equipment (electric or pneumatic) used shall be grounded or of the "double insulated" type. Approved rubber insulating gloves and mats shall be used (gloves and mats used must be approved for the maximum potential voltage). HSP 15.00. LO/TO any systems per HSP 2.08. If the wall being penetrated is a fire wall, contact Fire Protection for further instructions.</p> <p><u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, Electrical Safety, LO/TO, etc.). Refer to Table 1 of the Training Requirements Procedure (1-S52-T&Q-TR-004).</p>
39	Concrete Penetration: Is the material in a radiologically posted area or will the concrete penetration protrude into a radiologically controlled area?	Read and follow the Radiological Work Permit (RWP).
40	Concrete Penetration: Is there record, evidence or suspicion that the concrete material could have come in contact with radioactive material?	<p>Read and follow the Radiological Work Permit (RWP). Contact Rad Engineering for evaluation of additional controls.</p> <p><u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (1-S52-T&Q-TR-004).</p>
41	Concrete Penetration: Has the surface been treated in any way such that absorbed contamination could be hidden (e.g., painted, scabbled, or other decon efforts)?	<p>Read and follow the Radiological Work Permit (RWP). Contact Rad Engineering for evaluation of additional controls.</p> <p><u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (1-S52-T&Q-TR-004).</p>

CHG-1

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE

Page 8 of 13

Question	Site/Facility Information
42 Does this activity involve a Configuration Change as defined by DES-210?	Follow requirements set for by Engineering Package and DES-210.
43 Does the activity involve movement, interaction or removal of fissile material?	<p>Contact Nuclear Material Safeguards (NMS) for guidance and requirements. Nuclear Material Safeguards has the Safeguards & Accountability Manual (1-MAN-010-S&A) that addresses the safeguards for radioactive material activities onsite. The manual requirements are consistent with DOE 5633.3B order compliance criteria. There are specific measurement, surveillance and documentation requirements that are needed to ensure activities with radioactive materials go as planned. Fissile material handling and storage must be in compliance with building NMSM. Work Control document must receive a Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD). <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (1-S52-T&Q-TR-004).</p>
44 Is spark, flame, or heat producing work, to include welding, cutting, and/or brazing, to occur in a nuclear facility?	<p>Per HSP 34.10, <i>Hot Work</i>, such work requires a Hot Work Permit issued by the Fire Department! It also requires the posting of a qualified Fire Watch, accessibility of fire extinguishing equipment, and the control of combustibles in the hot work area. Work control documents must receive a SES/USQD. In a nuclear facility, such work may have additional restrictions of controls and requires that facility management (i.e., Shift Manager) be cognizant of the planned work and knowingly authorize the work through the Plan-of-the-Day (POD).</p>
45 Are flammable/explosive gases involved in or required for the work in a nuclear facility?	Work Control document must receive a Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD).
46 Does the activity involve removal of equipment, ducts, piping, gloveboxes, plenums or tanks from a radioactive area?	<p>Contact Nuclear Material Safeguards (NMS) for guidance and requirements. Nuclear Material Safeguards has the Safeguards & Accountability Manual (1-MAN-010-S&A) that addresses the safeguards for radioactive material activities onsite. The manual requirements are consistent with DOE 5633.3B order compliance criteria. There are specific measurement, surveillance and documentation requirements that are needed to ensure activities with radioactive materials go as planned and any criticality issues are resolved. The activity may involve a potential change to Clean Air Act (CAA) reported venting locations. Contact Environmental for guidance. Work Control document must receive a Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD). <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (1-S52-T&Q-TR-004).</p>
47 Will a new process or equipment be introduced which will be used for radioactive materials?	<p>Contact Nuclear Material Safeguards (NMS) for guidance and requirements. Nuclear Material Safeguards has the Safeguards & Accountability Manual (1-MAN-010-S&A) that addresses the safeguards for radioactive material activities onsite. The manual requirements are consistent with DOE 5633.3B order compliance criteria. There are specific measurement, surveillance and documentation requirements that are needed to ensure activities with radioactive materials go as planned. Work Control document must receive a Safety Evaluation Screen (SES)/Unreviewed Safety Question Determination (USQD). <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (1-S52-T&Q-TR-004).</p>

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE

Page 9 of 13

Question	Site/Facility Information
48 Is the work being conducted in a posted Radiation Area (RA)?	Work in RAs may require special training and use of secondary, multiple or supplemental dosimeters. Contact Radiological Engineering for guidance. Work in RAs should involve time reduction techniques such as pre-work preparation of paperwork/tools and use of remote tools and/or handling equipment, quick assembly scaffolding and/or ladders, and temporary shielding. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
49 Is the work being conducted in a posted High Radiation Area (HRA)?	Work in HRAs may require special training and use of secondary, multiple or supplemental dosimeters. Contact Radiological Engineering for guidance. Work in HRAs should involve time reduction techniques such as pre-work preparation of paperwork/tools and use of remote tools and/or handling equipment, quick assembly scaffolding and/or ladders, and temporary shielding. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
50 Is the work being conducted in a posted Very High Radiation Area (VHRA)?	Work in VHRAs may require special training and use of secondary, multiple or supplemental dosimeters. Contact Radiological Engineering for guidance. Work in VHRAs should involve time reduction techniques such as pre-work preparation of paperwork/tools and use of remote tools and/or handling equipment, quick assembly scaffolding and/or ladders, and temporary shielding. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
51 Is the work conducted in a posted Contamination Area?	Consider use of contamination reduction techniques including pens/pans, glovebags, and ventilation control as primary control. Respiratory protection should be considered when engineering controls don't reduce contamination to acceptable levels. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
52 Is the work being conducted in a posted High Contamination Area (HCA)?	Read and follow the Radiological Work Permit (RWP). ALARA review required. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
53 Is the work conducted in a posted airborne contamination area?	Read and follow the Radiological Work Permit (RWP). Respiratory protection will be required. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
54 Are the airborne contamination levels unknown?	Read and follow the Radiological Work Permit (RWP). Contact Rad Engineering for a respiratory evaluation. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
55 Has the area ever been designated as a radiological area?	Contact Rad Safety to assess RWP needs. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
56 Does the area's history indicate a past presence of radioactive materials or operations?	Contact Rad Safety to assess RWP needs. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).
57 Is there a potential for the activity to release radioactive material to the air through mechanical, chemical or other means?	Read and follow the Radiological Work Permit (RWP). Rad Engineering assessment needed for respiratory protection required. Contact Environmental for guidance. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (I-S52-T&Q-TR-004).

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE

Page 10 of 13

Question	Site/Facility Information
58 Does the area contain, or is it bounded by any radiological postings, barriers, signs or labels?	Rad Safety required to assess any radiological controls. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (I-S52-T&Q-TR-004).
59 Will the activity involve the transfer, pumping, or draining of radioactive or radioactively contaminated liquids?	Consider use of containment pens/pans, sleeving, and/or glovebags for contamination control. Contact Rad Safety for guidance.
60 Does the work activity involve equipment containing a sealed radioactive source or on equipment capable of generating radiation?	Contact Rad Safety for guidance.
61 Does the work involve penetration into systems, or surfaces containing or suspected of containing radioactive materials or contamination?	Consider use of shrouded tools, sleeving, and/or ventilation controls for control of airborne radioactivity/contamination. Contact Rad Safety for guidance.
62 Does the work involve removal or addition of shielding?	Contact Rad Safety for guidance.
63 Is the work being conducted in a soil contamination area?	Contact Rad Safety for guidance.
64 Will the work involve excavation in an area adjacent to an under-building contamination area?	Contact Rad Safety for guidance.
65 Will pyrophoric material be handled, processed, or encountered during the work activity?	Contact Rad Safety for guidance.
66 Does the activity involve soil probing or well installation?	Contact Rad Safety for guidance.
67 Will there be a new air emission or a change in the quantity of an existing air emission (including radionuclide NESHAP)?	Air emission means any air pollution agent or combustion of such agents, including any physical, chemical biological, radioactive substance or matter which is emitted during or from the activity. Air emission source means any device, article or equipment that emits or has the potential to emit pollutants to the atmosphere including those that do not discharge directly to the atmosphere through a stack, vent or duct. A source is not necessarily associated with or serviced by a discrete single source. Contact Environmental for guidance. <u>Training:</u> The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (I-S52-T&Q-TR-004).

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE
Page 11 of 13

Question	Site/Facility Information
68 Will the activity generate or does it have the potential to generate fugitive emissions or CERCLA releases of air pollutants or hazardous substances to the air?	Fugitive emission means air pollutants that escape to atmosphere through means other than an exhaust system, including, but not limited to, windows, vents, doors, ill-fitting closures or poorly maintained equipment, and those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Contact Environmental for guidance. CERCLA releases included the non-routine discharge of gases to the atmosphere; therefore, activities with the potential of causing releases to the atmosphere must be evaluated to minimize the likelihood of the work activity generating fugitive emissions or CERCLA releases. Ensure that precautions are taken to minimize the likelihood of the work activity generating fugitive emissions or CERCLA releases. Training: The specific training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table 1 of the Training Requirements Procedure (1-S52-1&Q-TR-004).
69 Will there be a release or discharge, or is there the potential of a release or discharge to soil or surface waters such as streams, wetlands (marshy or boggy areas), storm drains, or ponds? (This includes releases to sanitary and process sewers.)	Contact Environmental if this release or discharge is not in the Bldg. WSRIC or if this discharge has not been pre-approved through the CERCLA releases include any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment including abandonment of containers. Efforts must be made to minimize substances to the NPDES Permit is required. Training: Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-1&Q-TR-004) for specific RCRA and Waste Handling training and qualifications.
70 Will this activity result in the disturbance of wetland soils, surface water flow, or vegetation?	The activity must ensure compliance with Wetlands Procedure 1-S73-ECOL-001 and Policy 9-19 Training: Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-1&Q-TR-004) for specific RCRA and Waste Handling training and qualifications.
71 Will this activity include work in a Frele's Meadow Jumping Mouse habitat, or will the activity disturb migratory or protected birds?	Ensure that work activity is conducted in accordance with the "Migratory Bird Evaluation and Protection" procedure (1-G98-EPR-END.04), and the "Identification and Protection of Threatened, Endangered, and Special-Concern Species" procedure (1-D06-EPR-END.03).
72 Is the activity perceived to have any impact or potential impact (beneficial or negative) on the environment?	All work activities require submittal of an Environmental Checklist in accordance with the K-11 Management Directive, Site Activity Environmental for guidance.
73 Is this work activity being conducted in accordance with a Decommissioning Operations Plan (DOP), a Proposed Action Memorandum (PAM), an Interim Measures/Interim Remedial Action (IM/IRA) document, consent orders, Federal Facility Compliance Agreements (FFCA), or other CERCLA decision document under the Rocky Flats Cleanup Agreement	Ensure the work is conducted and appropriate notifications are made in accordance with the CERCLA decision document. Ensure that waste generated are identified on WEMS as being CERCLA waste, as well as identifying the waste by other appropriate categories. Contact Quality for guidance on those DOPs, PAMs, or IM/IRAs that reference quality data objectives. Contact Environmental to ensure planned scope of work is in accordance with consent orders or FFCA if applicable.

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE
Page 12 of 13

Question	Site/Facility Information
74 Will this activity install, modify, move, or impact an Underground Storage Tank (UST)?	Contact Environmental for guidance. UST Tank Systems must be designed and installed in accordance with 7-CCR-1101-14. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (1-S52-T&Q-TR-004).
75 Will this activity install, modify, move, or impact an Aboveground Storage Tank (AST)?	Contact Environmental for guidance. AST Tank Systems must be designed and installed in accordance with 7-CCR-1101-14. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (1-S52-T&Q-TR-004).
76 Will this activity modify a PCB storage facility (e.g., berms or flooring)?	Contact Environmental for guidance. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications.
77 Will this activity modify a current RCRA-regulated hazardous waste unit, relocate all or part of a unit, or otherwise impact a unit?	RCRA-regulated hazardous waste units include accumulation, storage, and treatment units, the containers and tanks within the units, and the associated building structures. Impacts to a unit may include disconnecting power to a unit, excavating nearby which results in infiltration of groundwater into a unit, removing lighting in a unit, or changing the egress route from a unit. Contact the Unit Custodian and Environmental during the planning process to ensure that the RCRA Part B Permit and the regulatory requirements are met throughout the duration of the work activities. Aisle space for inspections and emergency response personnel access to containers and tanks of hazardous waste must be maintained. Copies of the pertinent portions of the IWCP must be placed in the unit's operating record as modifications or repairs are made. Updates to WEMS will be required for the relocation of containers, and the relocation of Satellite and 90-day accumulation areas. If the work activity will modify a permitted unit, a permit notification may be required prior to initiating work. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (1-S52-T&Q-TR-004).
78 Does the activity include closure of a RCRA hazardous waste unit?	Evaluate if the activity will result in partial or full closure of the RCRA unit. Review Closure Plan to ensure that planned activities meet the requirements of the Plan. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications. All other training will need to be determined by the Job Supervisor, based on the known hazards (e.g., respiratory, HazCom, etc.). Refer to Table I of the Training Requirements Procedure (1-S52-T&Q-TR-004).
79 Will this activity generate a liquid sanitary waste (non-radioactive, non-hazardous aqueous waste)?	If the building does not have a WSRIC process for sanitary wastewater generated by this activity, contact Environmental for guidance. If this is a routine waste generation activity (e.g., repair of personnel showers which generate non-radioactive non-hazardous wastewater), or if this wastewater is routinely transferred to the Sanitary Treatment Plant for treatment, <u>THEN</u> no additional approvals are required. If not, <u>THEN</u> contact Environmental for coordination of approvals through the Sewage Treatment Plant. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications.

APPENDIX 3.3 - JOB HAZARD ANALYSIS GUIDE
Page 13 of 13

Question	Site/Facility Information
80 Will this activity generate solid sanitary waste which falls into the category of "special sanitary wastes"?	<p>Examples of "Special Sanitary Wastes" include non-radioactive sludges, chemicals, PCB contaminated wastes with <50 ppm PCB's, petroleum contaminated soils, waste materials from spills which are non-hazardous wastes, and non-friable asbestos. Solid sanitary waste is non-radioactive, non-hazardous, and passes the paint filter test for free liquids. Contact Environmental to obtain approval from RMRS Sanitary Waste Programs to dispose of these wastes in the sanitary waste landfill. Sanitary Waste Offsite Disposal Procedure (1-PRO-573-SWODP). <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications.</p>
81 Will this activity generate solid sanitary waste (excluding prohibited items)?	<p>Solid sanitary waste is non-radioactive, non-hazardous, and passes the paint filter test for free liquids. Prohibited items are identified in the Sanitary Waste Offsite Disposal Procedure (1-PRO-573-SWODP). Routine solid sanitary wastes can be placed in a dumpster if included in the Bldg. WSRIC and a WGI exists for this waste. Non-routine industrial wastes must be shipped to the sanitary landfill with a completed Non-Routine Waste Origination Log (NRWOL) and a P/WRE. Contact Environmental for assistance in completing the waste determination and any required documentation for this waste. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications.</p>
82 Will this activity generate hazardous, radioactive or mixed waste?	<p>If the building does not have a WGI for the waste being generated by this activity, contact Environmental for guidance. Management in Containers or Tanks: Plan in advance for approval to pour aqueous wastes meeting the Building 374 waste acceptance criteria down the process drains. Management in Containers: Plan in advance for accumulation of waste in an appropriate area, and transfer of the waste to a proper accumulation or storage area. Ensure approvals for Satellite or 90-day Accumulation areas are received prior to generating the waste. Ensure that the waste meets the Waste Acceptance Criteria for the storage or treatment area, prior to waste transfer into those areas. If immediate treatment of a hazardous or mixed waste is required, contact Environmental for preparation, submittal, and approval of a generator treatment notification, prior to initiation of waste generation activities. <u>Training:</u> Job Supervisor shall refer to Figure 3 (RCRA Personnel Position Descriptions) of the Training Requirements Procedure (1-S52-T&Q-TR-004) for specific RCRA and Waste Handling training and qualifications.</p>

APPENDIX 3.4 - TEAM CREDENTIALS REPORT FORM AND INSTRUCTIONS

ACTIVITY TITLE: _____ WORK CONTROL NO. _____

NAME	ROLE & JUSTIFICATION FOR BEING SELECTED ON TEAM OR OTHER COMMENTS

PROJECT MANAGER/RESPONSIBLE MANAGER APPROVAL:

NAME (Printed) _____ SIGNATURE _____ EXT. _____ DATE _____

PROGRAM CHIEF ENGINEER APPROVAL (if required, see instructions):

NAME (Printed) _____ SIGNATURE _____ EXT. _____ DATE _____

APPENDIX 3.4 - TEAM CREDENTIALS REPORT FORM AND INSTRUCTIONS

INSTRUCTIONS

The Team Leader **SHALL**:

- Identify areas of expertise required to perform the graded level of hazard assessment and planning selected for the subject activity.
- Determine number of team positions and subject matter experts (SMEs) required for areas of expertise. This **Should** be based on the results from the Hazard Profile Screen from the ASF and **Should** include the Team Leader, safety discipline experts, process experts (floor-level worker), activity experts, building or area experts, team facilitators, and support/administrative staff. Additional SMEs **SHALL** be added in accordance with the JHA checklist, Appendix 3.2.
- Select team members and SMEs who have the required qualifications.
- Obtain permission from the managers of the individuals selected to utilize their services for a specific time period and percentage of time.
- List the activity title and work control number on the Team Credentials Report Form.
- Document the following information on Team Credentials Report Form:
 - Name (printed)
 - Role and justification for being selected on team or other comments.
- Submit the Team Credentials Report to the PM/RM (and/or the Program Chief Engineer for high planning) for review and approval. Resumes **may** be requested.
- Distribute completed and approved Team Credentials Report to all team members and their managers, and include in the work document.

The RM/PM **SHALL** review the Team Credentials Report and indicate approval by signing.

For high planning level, the PCE **SHALL** review the Team Credentials Report and indicate approval by signing.

CHG-1

APPENDIX 3.5 - INTEGRATED HAZARD ASSESSMENT GUIDELINES

This section provides guidelines for completing Integrated Hazards Assessments (IHAs) for radiological, chemical, and industrial hazards likely to be encountered in performing activities at the Site.

INTEGRATED HAZARDS ASSESSMENT PROCESS

An IHA of specific activities **Should** be graded, commensurate with the nature or the hazards, to understand impacts from worker interactions with hazards that could be introduced as a result of specific work tasks/activities. This assessment supports the development of integrated work control packages, procedures, or other methods used in developing implementing documents for work.

CHG-1
Hazard assessments are performed at different points and at different levels of rigor during the planning of work to support an activity. The level of hazard assessment is limited in the ASF to a qualitative profiling of hazards. This hazard assessment profile determines the general nature of the work activity hazards, identifies unique or unusual hazards, and determines the expected number of hazards related issues that need to be addressed in planning the work activity. This latter determination is used to assist in the selection of an appropriate work planning process. Once the work planning process has been selected, either qualitative, semi-quantitative, or quantitative hazard assessment techniques will be applied, commensurate with the inherent hazards of the work activity. The assessment should be accomplished by evaluating each step in the work activity work instruction for workplace hazards and for hazards introduced from chosen work methods. Performing a walk down of the work with the workers who will perform the task most effectively supports this process. Assessment **Should** involve reviewing job steps associated with a task and evaluating radiological and industrial hazards. The assessment **Should** involve managers, engineers, health and safety personnel, and workers.

The discussion following provides guidance and information on screening processes to identify the hazards, analyze the hazards, and generally identify the controls to prevent or mitigate the hazards posed by the activities under consideration.

Site activities require commensurate controls to prevent or mitigate the hazards posed by the activities. Some activities (e.g., those that pose significant nuclear or radiological hazards) require a rigorous control set, as provided by nuclear safety AB documents such as a Safety Analysis Report (SAR) Basis for Interim Operations (BIO), or Basis For Operations (BFO).

Activities that do not pose a nuclear or radiological hazard still require a graded control set, but do not require a nuclear safety AB if they are not conducted within nuclear facility. Activities in this latter category do, however require a graded hazards analysis to be performed, or to have been performed. Also, the impact of hazards for these activities upon nuclear activities or facilities needs to be identified and assessed.

Hazards analyses and controls development in both of the above instances are graded to:

- The relative importance to safety
- The magnitude of any hazard involved
- The life cycle stage of a facility
- The programmatic mission and particular characteristics of the facility, including regulatory compliance requirements
- The verified design basis documentation available

HAZARD ASSESSMENT TOOLS

Once hazards have been identified and assigned to the appropriate SMP, the individual SMPs will use their programmatic-specific hazard assessment tools (procedures) to evaluate the impact of the hazard, the interaction of the hazard on other programs/activities, and the appropriate safety controls needed to address the hazard (for example, mitigation, elimination). However, these individual evaluations must then be reviewed together by the team to determine if:

- There are conflicting hazards or hazard impacts
- There are any synergistic impacts from the hazards that could cause additional hazards or impacts.
- The control set can be integrated and does not conflict with one another, and
- The control set can be implemented.

Many variations of assessment techniques exist and are used in evaluating hazards. These techniques help identify conditions or faulty procedures or processes that could lead to accidents, injuries, property damage, or environmental impact. However, regardless of the variation in available tools, each hazards assessment process tool or technique provides the following elements:

- Work activity definition
- Characterization, Categorization, and Classification of Hazards
- Identification of Scenarios of Concern
- Evaluation of Consequence
- Identification of Controls to Prevent and Mitigate Hazards
- Documentation of the Assessment

Site SMPs use several different techniques to conduct hazards assessments. Table A3-3, site SMP hazard assessment tools and technique, identifies those techniques, where they reside within the site's infrastructure programs, and their purpose or regulatory driver. The level of effort and techniques used to perform an integrated hazard assessment will vary depending on the complexity of the disposition project work scope and the hazards present. For each technique listed, the purpose and application, as well as a reference to additional information for each technique, is provided. For purposes of performing a hazard assessment, the JSA, JHA, and Activity Hazards Assessment (AHA) tools and techniques described in Table A3-3 are considered to be functionally equivalent. Note that the Activity Control Envelope (ACE) process is replaced by the "High" planning level team-based approach in this manual.

Table A3-3 Site SMP Hazard Assessment Tools and Techniques

Tool/Techniques	Infrastructure Program(s)	Purpose / Driver
Activity Control Envelope (ACE) [Replaced by IWCP High Planning Level]	Integrated Work Control Program (IWCP)	Superceded by IWCP. Provides 1) an analysis of scope of work point, 2) a flow chart of the process steps, 3) a hazard assessment, 4) risks the hazards pose, 5) an activity-based control set for inclusion in work control documents, and 6) a set of the applicable standards for the work activity. The ACE uses a team-based expert closure process in its development./ "Necessary and Sufficient" DOE Order
Activity Hazards Assessment (AHA)	Closure Projects	Similar to a JSA or JHA.
As Low as Reasonable Achievable Review (ALARA)	Radiological Protection	Used for assessing Radiological hazards only. Some DOE facilities have extended the ALARA review to include non-radiological hazards./ 10 CFR 835
Auditable Safety Analysis (ASA)	Nuclear Safety/Radiological Protection [for radiological facilities]	A defensible safety analysis (similar to a SAR but with much reduced content and requirements) which is developed for a radiological facility. / DOE-EM-STD-5502-94
Criticality Safety Evaluation (CSE)	Nuclear Criticality Safety	Operations with fissionable materials which pose a criticality accident hazard are evaluated and documented to demonstrate that the operation will be subcritical under both normal and credible abnormal conditions. / DOE Order 420.1
Fire Hazard Analysis (FHAs)	Fire Protection Program	Fire hazards analyses (FHA) for all nuclear facilities, significant new facilities and facilities that represent unique or significant fire safety risks. The conclusions of the FHA shall be incorporated in the Safety Analysis Report (SAR) Accident Analysis and shall be integrated into design basis and beyond design basis accident conditions./ DOE Order 420.1
Failure Modes and Effect Assessment (FMEA)	Nuclear Safety	An assessment of each component for its potential modes of failure, effects of failure, and detection methods. May be undertaken before initiating operations or during operations.
Health & Safety Plan (HASP)	Occupational Safety & Industrial Hygiene; Environmental Compliance and Management	HASP provides a safety analysis, hazard assessment and controls identification for the work activity to be performed./ 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response.
Hazard and Operability Study (HAZOP)	Nuclear Safety	A critical assessment of component capabilities and system configurations. Used in the chemical industry, rigor and formality based upon the level of risk of operation.
Job Hazard Analysis (JHA)	Health & Safety Practices Manual, IWCP	Also see JSA. Occupational Safety and Health Administration, U.S. Department of Labor, <i>Job Hazard Analysis</i> , OSHA 3071, 1988 (Reprint)
Job Safety Analysis (JSA)	Occupational Health & Safety	An assessment of each step in a job work activity that is undertaken before initiating work activities to identify needed controls or after incidents to identify needed improvements in controls. Variants of this technique are often used in evaluating hazards associated with work packages or for walk-throughs of facility to identify conditions or faulty procedure that could lead to accidents, injuries, property damage, or environmental impact.
Nuclear Safety Authorization Basis Safety Analysis (NSAB SA), e.g., NS AB docs including SARs, BIOS, BFOs, FSAs, TSRs, OSRs; Use of Safety Analysis and Risk Assessment Handbook (SARAH) methodology.	Nuclear Safety	Graded approach to assess hazards, analyze accident scenarios, and develop nuclear safety authorization basis controls for Site > or = Hazard Category 3 nuclear facilities. DOE Orders 5480.23, 5480.22; DOE Standards DOE-STD-3009-94, DOE-STD-1027-92, DOE-STD-3011-94.
What-If / Checklist Assessment	Nuclear Safety; Occupational Health & Safety	Involves the development and evaluation of checklists designed to identify hazards quickly and assess their controls. These may be administered to ensure that hazards are identified on tasks/activities that are familiar to workers and previously analyzed.

CONDUCTING AN INTEGRATED HAZARDS ASSESSMENT

In order to provide a hazard assessment, an evaluation is needed to determine the selection of an appropriate hazard assessment methodology. Hazard assessments are mainly qualitative and are conducted by a team of workers, using current Site SMP procedures.

A wide range of hazards exists at the Site, related to past nuclear weapons component production operations and the current Site closure activities. These hazards range from standard industrial hazards to unique hazards associated with storage of nuclear materials and decommissioning of nuclear weapon component production facilities. At the Site, SMPs are tailored to the specific hazards on-Site and are implemented in individual facilities using a graded-approach. The graded-approach is based upon the facility (a) programmatic mission and life cycle stage, (b) magnitude of hazards involved, and (c) relative importance to safety, as well as the sitewide infrastructure requirements and regulatory compliance requirements.

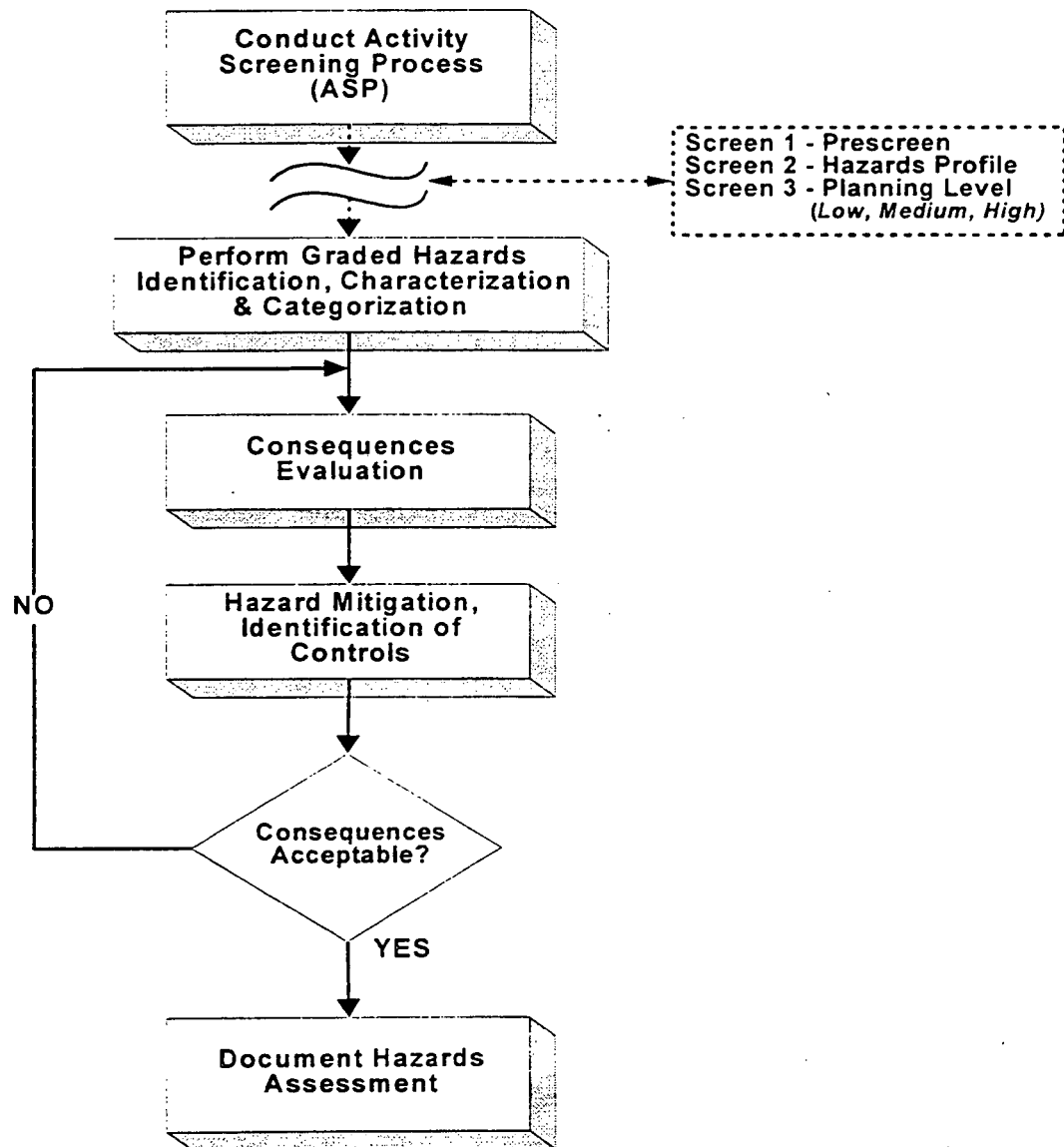
Hazard assessment provides insight on the severity of consequences, an understanding of how controls mitigate or prevent the consequences, and how controls are promulgated into work control documents. Controls implemented in the hazard assessment are implemented or changes to the controls are reevaluated for impacts against the original assessment.

It is incumbent on Site RM/PMs to recognize what comprises the safety basis for the Site facilities and activities for which they have line management responsibility. Activities outside a given nuclear facility also need to be evaluated for impact on the AB of that facility. Safety bases for Site facilities and activities are derived in a graded approach, commensurate with the hazards presented for these facilities. Integrated hazard assessments, coordinated between cognizant Site SMPs, are performed to evaluate these hazards. Figure A3-1 depicts the general process flow for developing hazard assessments to support establishing safety controls and safety bases.

NOTE: *The Integrated Hazard Assessment process described in this section is intended to satisfy multiple hazard assessment requirements and programmatic drivers from various site SMPs. The intent is to assess hazards based on information available from work activity hazard identification profile information documented in Screen 2 of the ASF, as well as using knowledge of the work scope for a work activity. These assessments provide a "baseline" of anticipated hazards and their potential consequences.*

APPENDIX 3.5 - INTEGRATED HAZARD ASSESSMENT GUIDELINES

Figure A3-1 Hazard Assessment Process



CONDUCTING AN INTEGRATED HAZARDS ASSESSMENT (continued)

The assessment **Should** evaluate radiological (including nuclear and criticality issues) and industrial hazards, as applicable, using a multi-disciplined team of health and safety personnel, engineering personnel, and facility disposition workers. Furthermore, reviewers **Should** be involved in the early phases of assessment

In cases where hazardous substances or conditions are present, analyses **Should** evaluate (1) the type, form, quantity, and concentrations; (2) location; (3) conditions under which hazards could occur; and (4) the hazards inherent harmful characteristics (for example, toxicity).

The hazards evaluator determines the consequences of the impacts of normal operations and abnormal events given controls are not in place. The hazard assessment evaluator has to assess whether or not the identified impacts are within safety basis decision thresholds. If the controls identified do not reduce the potential for the impacts to occur or reduce personnel exposure to the hazards, additional controls are implemented to reduce the consequences to an acceptable level. Iteration on identification of additional controls is required when safety basis decision thresholds are exceeded.

Consequences of interest include those adverse occurrences which threaten the health or safety of the public, the workers, or the environment, which threaten the regulatory compliance posture of the Site, and which threaten the mission of the facility(s).

Facilities should rely on the existing hazard assessment (includes AB safety assessments performed for nuclear facilities) from the previous phase of a facility's life cycle, as appropriate, as a "baseline" for the disposition work activity when the following conditions apply:

- The assessment was previously approved by the required level of management;
- The assessment bounds hazards expected during the planned disposition work activity;
- No update of the assessment is needed, that is, it is applicable to the planned activities;
- Task hazard analyses are performed for disposition tasks; and
- Planned disposition tasks and associated hazards are screened against the existing hazard assessment to ensure that the existing hazards assessment and their associated controls are applicable.

Activity Identification

The first step in preparing a hazards assessment is to determine the objective of the work activity(s) which will be covered by the assessment. The operations to be accomplished **Should** be specifically identified along with the areas (locations) in which the operations will be accomplished. [NOTE: This information can exist in a nuclear facility AB documentation. For example, in SAR, BIO, BFO, or FSA documents; in Activity Control Envelope (ACE) documents; or in Project Management Plans, and Health and Safety Plans.]

Hazard Identification, Characterization, and Classification

The second step is to identify and describe the current hazards associated with the work activity to take place. The following are examples of information required:

- Hazardous Material Inventories
- Facility Design
- Facility Systems and Components
- Industrial Hazards
- Radiation and Contamination Levels

Information Gathering

Information needed for this process includes two levels of detail:

1. Determination of applicable procedures, OSRs, TSRs, SARs, and any other requirements which apply to the activities; and,
2. Characterization of the facility.

Baseline data for each project work activity should be collected to support a thorough physical, chemical, and radiological characterization. This baseline data should include:

- Drawings/records reflecting as-built and as-modified condition of the facility;
- The current condition of all systems, components, and structures including existing protective barriers and/or modes of operation which could affect (directly or indirectly) the activities being assessed (may require walk downs to cover areas where information is unknown or incomplete; and,
- The type, form, quantity, and location of hazardous chemical and radioactive materials and of physical hazards in the facility.

This step should be thoroughly documented and should include listings of applicable documents and documentation of any pertinent information obtained verbally.

Hazards Identification

The objective of this step is to identify any radiological, chemical, and industrial hazards which might pertain to the work activity or activities in question. For chemicals and radioactive materials the types, forms, concentrations, quantities, and locations are identified. Industrial hazards are identified as applicable. Any special considerations relating to containment, explosion, fire, reactivity, health, etc. should be identified here.

Once the hazards are identified, they are screened to determine the appropriate hazard assessment method to be applied. Screening consists of determining the level of hazard which will be addressed or which there is cause for concern. DOE Standard 1027 provides additional guidance on performing hazard assessments.

Estimate Source Terms

Source terms that bound the magnitude of the hazard (e.g., amount of hazardous chemical, radiation exposure level, etc.) are then determined. These source terms allow one to define what potential for adverse consequences exists.

Identification of Existing Controls

Administrative controls, physical controls, and design controls that exist are then determined. Controls could be found in the facility operating basis documentation, such as nuclear facility AB documentation, e.g., in SARs, BIOs, BFOs, or Facility Safety Assessment documents, in ACE documents. Controls for less-than-nuclear-Hazards Category 3 facilities controls are found typically in operational controls, As Low As Reasonably Achievable (ALARA) reviews, Activity Safety Assessments (ASAs), Health and Safety Plans, etc.

Identification of "Scenarios of Concern"

Identify the scenarios of concern (for example, spills or fires) that could cause adverse impacts from normal and reasonably expected abnormal events. The hazard assessment evaluator has to keep in mind what would be considered normal and reasonably expected abnormal events or "accidents". An "accident" is defined as an unexpected and undesirable event. The intent in performing the hazard assessment is to identify those normal and/or unexpected and undesirable events that might occur and to assist in identifying those controls necessary to mitigate the potential negative impacts to the health of workers or public or that harm the facility or environment. The evaluator should use a level of sophistication necessary to define the approach for the hazard assessment, keeping in mind the consequences of the event. The following are examples of how the evaluator might approach the hazard assessment:

- Assume no controls in place
- Apply Deterministic approach (assume event will happen) as appropriate
- Move towards a Probabilistic Risk Assessment (PRA) technique for assessment of very high risk activities

The safety basis decision thresholds will guide the evaluator to the level of sophistication and level of hazard assessment rigor needed to develop the safety basis for the work activity or facility assessed.

Scenario of Concern Determination

Scenario of Concern includes conditions which could adversely affect someone or something. They could be due to normal process-related radiation exposures (which could potentially be averted), potential inhalation of toxic materials due to spills or accidents, energy sources or other hazard dispersion mechanisms.

All scenarios of concern which could have an adverse impact should be considered in development of safety features to address hazards and accident scenarios.

Develop Scenarios

- | For adverse affects to occur from an accident, there would be an initiating event which could be accompanied by one or more failures of equipment or personnel. The chain of events which could potentially result in an adverse consequence is a scenario. A full and complete hazards assessment will include all credible scenarios and their attendant consequences.
- | Hazard assessments **Should** include considerations of human factors which can influence events or cause events to occur. Work environmental factors that might degrade the reliability of operations personnel in performing tasks should be described and analyzed.

Hazard Mitigation Identification

With the identification of hazards and potential negative impacts, the next step is to identify the necessary and sufficient controls (engineering and administrative) necessary to mitigate the hazards and potential impacts associated with the work activity(s). The hazard assessment evaluator should identify only the necessary and sufficient controls (use of protective clothing, shielding, limit the number of containers handled at any one time, etc.) to be used, relative to the hazards and potential negative impacts associated with the work activity(s). The hazard assessment evaluator **may** solicit other SMEs when decision thresholds are exceeded.

CHG-1

Define Controls to Meet Acceptance Criteria

For those potential impacts which are determined to be unacceptable, additional controls should be proposed to reduce the potential impacts. The scenarios and events then need to be reevaluated to determine if the additional controls will yield an acceptable level of impact (per the acceptance criteria). If the impacts cannot be lowered by the imposition of controls to meet the acceptance criteria, or, if the cost of necessary controls is excessive, document these results and present them to management.

Establish Event Trees, As Necessary

For more complicated scenarios, event trees **Should** be developed which analyze the chain of events described. Assessment of these event trees **Should** include estimation of the probability of each separate event leading to adverse consequences.

Consequences Evaluation

Determine the consequences of the impacts of normal operations and abnormal events given controls are not in place. The hazards assessment evaluator has to assess whether or not the identified impacts are within the guidelines. If the controls identified do not reduce the potential for the impacts to occur or reduce personnel exposure to the hazards, additional controls **SHALL** be implemented to reduce the consequences to an acceptable level. Iteration on identification of additional controls is required when guidelines are exceeded.

Consequences of interest include those adverse occurrences which threaten the health or safety of the public, the workers, or the environment, which threaten the regulatory compliance posture of the plant, and which threaten the mission of the Site.

Hazard Assessment Documentation

The hazard assessment **Should** be formally documented, including, the following minimum documentation, and filed in accordance with approved document control procedures. The following is a list of minimum documentation requirements:

- Unique Hazard Assessment Document Identification Number
- Requester, Evaluator or Assessor, and Independent Reviewer
- Activity Scope
- Requirements Identified
- Assumptions
 - Hazard Assessment Methodology Utilized
- Hazard Assessment Checklists, Tables, Reports, etc.
- Scenarios Developed
- Consequences Developed
- Frequencies Determined for Consequences
- Assessment Results
- Comparison to decision thresholds
- Control Measures

Documentation used in the development of results, e.g., hazard assessment checklists, JHAs, Job Safety Analysis (JSAs), Failure Modes and Effects Analysis (FMEAs), process notebooks, database information, etc., **Should** be retained in a controlled method.

CHG-1

CHANGE CONTROL

1-947
Hazard assessments should be updated throughout the duration of the work activity. This involve evaluation of the hazard any time a change in a facility disposition phase occurs. This would include, for example, deactivation to long-term surveillance and maintenance (S&M) or when there is a change during a life cycle phase (e.g., building support utilities modification or termination during long-term S&M). The hazard baseline is reevaluated to assure that 1) new hazards or energy sources have not been introduced, and 2) assumptions and commitments associated with the hazard baseline are still valid. If either condition is not true, the hazard assessment **Should** be updated, and all of the subsequent hazard controls examined and modified to assure that they still provide an adequate and effective level of worker and public protection.

CHAPTER 4 - WORK PACKAGE - TYPE 1 PROCESS

1.0 PURPOSE

This chapter provides the requirements for the development and performance of Type 1 Work Packages (WPs).

2.0 SCOPE

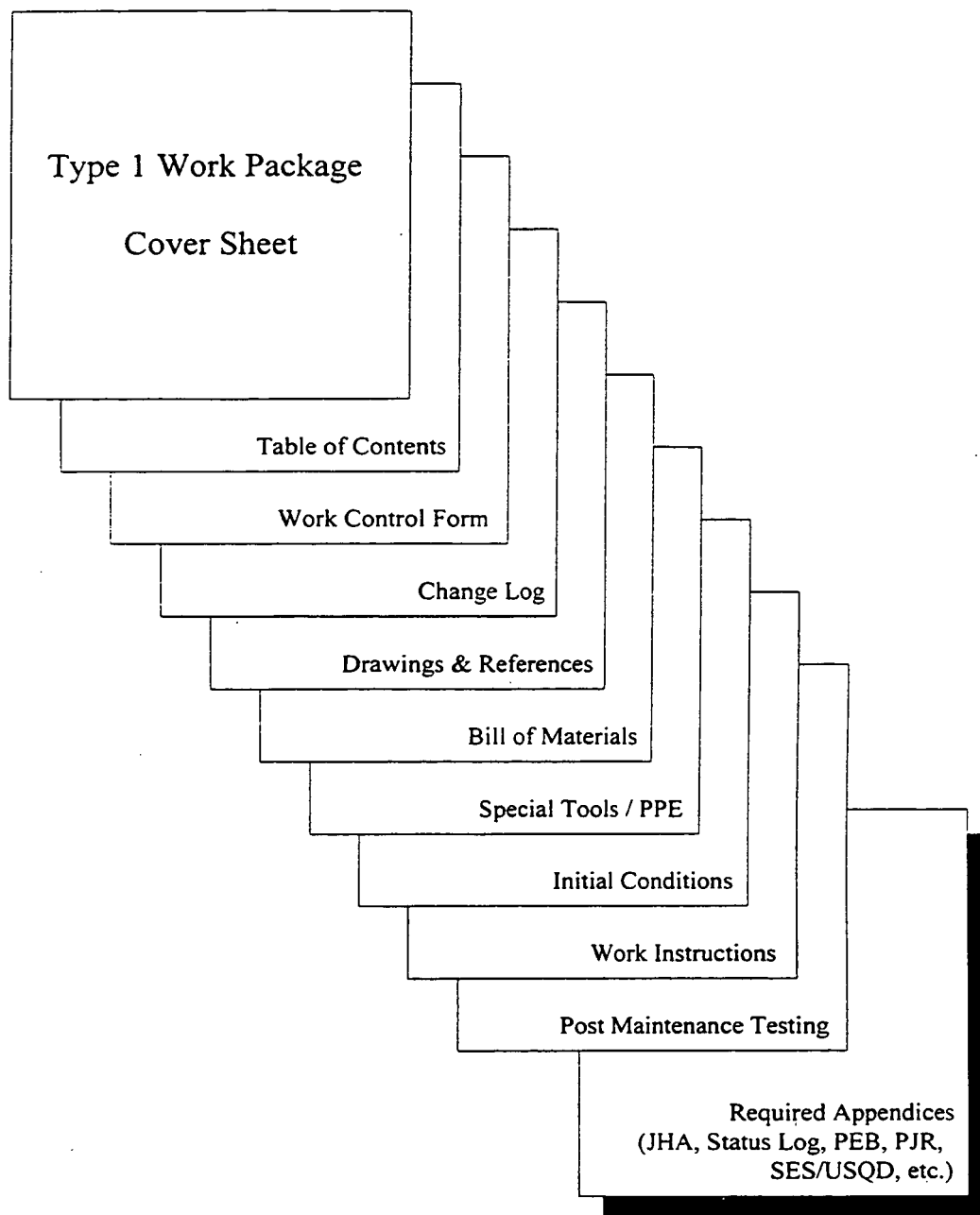
Type 1 WPs are used for activities which do not require engineering design. These activities are typically repairs, deactivation of equipment, simple environmental remediation, etc. Activities requiring engineering design are performed with Type 2 or Type 3 WPs. Type 1 WPs are not required for minor maintenance.

CHG-1
This chapter provides the necessary information needed to develop and perform Type 1 WPs. The determination to use this approach will be made by the RM. Skill-of-the-Worker methodology **Should** be used, whenever appropriate, to help streamline the WPs into a more user-friendly document thereby allowing the crafts to focus their efforts where they are needed to ensure safe and efficient performance of work.

Type 1 Work Package Summary:

Essentially, a Type 1 WP is similar to the way work has always been done within the framework of the IWCP, with the addition of institutionalized hazard analyses and team based approach within an overall context of ISMS. Figure 4-1 shows what an actual Type 1 WP can look like.

Figure 4-1 – Type 1 Work Package



CHG-1

3.0 INSTRUCTIONS

3.1 Planning Determinations

Standard Work Packages (SWPs) **may** be used for those work activities that are repetitive in nature. SWPs should not be used as a mechanism to circumvent the IWCP process, but should be for specific repetitive work activities (i.e., SWPs should not be developed to TS&R all electrical within a facility because the hazards, controls, and work conditions are different throughout the facility). SWPs **may** be developed to perform repetitive maintenance actions on systems or components in all buildings on the Site that meet the scope of the SWP and to perform projects (capital and expense) that cover more than one operations area/company. If a SWP is to be used, then a JHA specific to the scope of work **SHALL** be conducted in accordance with Chapter 3, prior to initiating the SWP.

The RM/PM **SHALL** review the scope of existing SWPs to determine if any exist which are adequate to perform the requested work identified on the WCF. Use the SWP if the scope is adequate. Otherwise continue development of the WP.

NOTE: *The team assembled to plan the work, e.g., SMEs, engineers, floor level workers, planners, etc., **Should** participate in walk downs. The level of participation should be graded to the complexity, hazards level, and uncertainty of the task.*

The Planner, Responsible Organization, User and SMEs assigned perform a walk down of the requested activity. This **Should** be completed concurrently with the development of the JHA and IHA (as required). The walk down **Should** include inspection of the structures, systems, components and work environment related to the proposed work activity.

The walk down **Should** be performed by personnel familiar with the area and equipment, SMEs, craftsmen, equipment operators and any other supporting organizations.

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walk down and review available lessons learned from previous WCDs.

3.2 WP Development

Each page of the WP **SHALL** include the page numbers, work control number, and current revision.

The following subsections provide the structure for WPs, as required. If the section(s) is not required (such as special tools, drawings) to support the work, the Planner **Should** state so in Section 2 of the WP. The sections should be arranged in the order stated below.

The following sections **SHALL** be included for all WPs developed using this chapter:

- Section 1, Work Package Cover Sheet
- Section 2, Table of Contents/List of Effective Pages
- Section 3, Work Control Form
- Section 9, Work Instructions

3.2.1 Section 1 - WP Cover Sheet

The Planner **SHALL** Develop a WP Cover Sheet per Appendix 4.1

CHG-1

If the WP is a SWP, he/she **SHALL** then complete a SWP Cover Sheet per Appendix 4.2.

Concurrence and approval signatures are obtained in accordance with Section 3.3, and closure signatures are obtained in accordance with Section 3.8.

3.2.2 Section 2 - Table of Contents/List of Effective Pages

The Planner **SHALL** develop a Table of Contents as follows:

- List the required sections and appendix headings exactly as it appears in the WP.
- If the WP does not require a particular section (i.e., the section does not add any value in the accomplishment of the work), then list the title of the section and enter N/A or NONE instead of a page number for that heading.
- Identify in the right margin the number of the pages for the section.

3.2.3 Section 3 - Work Control Form (WCF)

The Planner **SHALL** Place a computer-generated WCF, or copy of the handwritten original WCF in the WP.

3.2.4 Section 4 - Work Package Change Log (WPCL)

The WPCL will be inserted in Section 4 of the WP with the Revision Request in accordance with Section 3.6.

3.2.5 Section 5 - List of Required Drawings and References

The Planner **SHALL**:

- Prepare a List of Required Drawings and References.
- Identify each item by:
 - Reference or drawing number.
 - Description.
 - Issue date for the revision, Procedure Change Notice (PCN), or Document Control Form (DCF).

The List of Required Drawings and References Section is divided into two required subsections, Performance References and Developmental References. Further subdivision may be desirable to organize long lists of references. All reference documents cited in the document are listed in this section. List the date of the latest change or revision on the right side of the page. Performance references, if used, are called out by the individual action steps and should be physically included in the WP as an Appendix or referenced, depending on size.

The Planner **SHALL** then develop Performance References by listing Standards, Procedures, Instructions, Drawings, AB Documents, etc.

The use of performance references **SHALL** be minimized by ensuring that only those references which the workers must actually open and use are included.

CHG-1

Developmental references are used in the planning process but are not generally included in the WP. Typical developmental references include vendor manuals, plant drawings, and Site Technical Standards.

3.2.6 Section 6 - Bill of Material (BOM) / Consolidated BOM (CBOM)

Refer to Appendix 4.5 for details on the development of Bills of Material.

3.2.7 Section 7 - List of Special Tool Requirements and Materials

As required, the Planner **SHALL** develop a List of Special Tool Requirements and Materials, Personnel Protective Equipment (PPE), or specified safety equipment. The PPE requirements **Should** be obtained from the walk down and JHA, or from direct input from the appropriate SME.

3.2.8 Section 8 - Initial Conditions and Prerequisites

The Planner develops the WP Purpose and Scope and then the Precautions and Limitations that apply to the WP. He/she **SHALL** inform the performer of specific requirements for the requested work and hazardous conditions and its potential effects in the precautions and limitations section.

Precautions alert document performers to required actions and conditions that represent potential hazards to personnel or possible damage to equipment, or that establish abnormal conditions. Limitations define boundaries that are not to be exceeded.

The Planner then develops the Initial Conditions/Prerequisites that apply to the WP. He/she should consider the following in preparing Initial Condition/Prerequisite statements:

- The safety of personnel, the general public, and the environment
- The protection of equipment and material
- Inadvertent, incorrect or omitted actions that could cause system operation, shutdown or could impact TSRs/OSRs
- Limitations identified in approved vendor information and design documents
- Unusual alarms that could occur or are expected to occur as a result of the performance of work
- Actions that could result in automatic shutdown or activation of any engineered safety features
- The reduction of personnel or environmental exposure to radiation, contamination, electrical shocks, dangerous chemicals, fire hazards, confined spaces, and moving or rotating equipment

The Planner then **may** develop a step for approved remedial actions and place a copy of the approved remedial actions in the Miscellaneous/Field Generated Paperwork Appendix of the WP.

He/she develops Preliminary Actions and Site Preparations that apply to the WP. Use the following as a guide:

- Specific training or qualification requirements specific to the WP.
- Performance of a PEB or Job Task Briefing (JTB) as required by COOP Manual
- Review of the applicable Material Safety Data Sheet (MSDS)
- BOM/CBOM inventory and material verification
- Any preparatory field activities that are required to be completed before proceeding with the Specific Task Instructions

CHG-1

- Verifying the operability of systems or components before removal from service, for safety items addressed in AB Documents
- Confirming the correct system lineup

If the required actions are not specified in the AB Document and have not been approved, they must be documented and reviewed by Nuclear Safety and Operations Review Committee/Independent Review Committee (ORC/IRC), per the NSM and 1-52000-ADM 02.01, *Independent Review Committee*.

The Job Supervisor **SHALL** review the training requirements for those hazards identified in the JHA that indicate the "Training Required." Table 1 of the TUM can be referenced for most of the training requirements.

3.2.9 Section 9 - Specific Task Instructions

The Planner develops task instructions that provide:

- Clearly understood text
- Appropriate level of detail
- Concise instruction steps in a logical sequence using Skill-of-the-Worker methodology, when appropriate
- Coordination of multiple actions

Specific task instructions are tailored and graded with input from the following as appropriate:

- Maintenance
- Engineering
- Safety SMEs
- Quality
- Metrology Laboratory
- Other organizations required by the WP

Check-off space **Should** be used instead of signatures for all work steps that do not require witness, inspection, verification points, or data collection. Signatures may be required for:

- Specific interim and final witness, inspection, or verification points, as identified by Engineering, Safety Discipline, or Quality
- Steps needing inspection, or verification, such as witness points and verification of activities, or data collection
- Identification of steps that could initiate an equipment shutdown or transient or the initiation or interruption of any process action
- Identification of steps that inform the operations personnel of expected alarms or equipment operations.
- Specific radiological control hold points, as identified by Radiological Safety
- Authorization of activities that are cited or credited in AB documents
- HSP 18.04 – Control of Radioactive Sources

3.2.10 Section 10 – Post Maintenance Test (PMT) Requirements

Engineering, the RM, Maintenance and the Planner together develop PMT requirements, which provide the following:

- Purpose describing the intent of the PMT

- Precautions and limitations specific to the PMT
- Prerequisites specific to the PMT
- PMT task instructions specific to the PMT
- PMT acceptance criteria and verification

The Planner develops steps for the Shift Manager (SM) to compare the work accomplished with the PMT or inspection performed to determine that all work is acceptable prior to returning the equipment or system to normal service per COOP, if required.

3.2.11 Work Package Appendixes

The Planner develops the following appendixes, as required by the requested activity:

- Job Hazard Analysis (JHA) - *Required for all WPs* (includes ALARA reviews and other safety related documents)
- WP Status Log - *Required for all WPs*
- Miscellaneous/Field Generated Paperwork Record Sheet (for example, Facilities Inspection Report, Material Certification Tags, Pre-screen, or a Safety Evaluation Screen (SES), or an Unreviewed Safety Question Determination (USQD), applicable MSDS', required permits and checklists) - *Required for all WPs*
- Review Comment Sheet(s)
- PJR Checklist
- Pre-Evolution Briefing Record in accordance with COOP
- Work Package Revision Request (WPRR), as needed
- Non-routine Waste Origination Log (NRWOL) prepared in accordance with 1-I34-WO-1103, *Non-Routine Waste Log*.
- WP Re-Start Prerequisites, **may** be inserted when needed.
 - Re-start prerequisites consist of those steps from Section 8 of the WP that are to be performed prior to authorizing work to be restarted after an unforeseen work stoppage.
 - SM, RM, or the Job Supervisor update the Work Package Status Log to include comments about the progress of work, shift turnover, work stoppage, emergency actions, WP recovery steps, and actions which are required to place the work site in a safe condition.
- Include other pertinent information, drawings, sketches, or procedures.
- High planning level tables and forms, per Chapter 3.

3.3 Concurrence and Approval

The Planner and RM **SHALL**:

- Sign and date the WP cover sheet
- Mark the signature line(s) N/A if the work does **NOT** require Health and Safety (H&S), Engineering, Radiological Controls, or Quality concurrence in accordance with the Hazards Analysis performed in Chapter 3
- Ensure that the changes are reviewed and concurred with by the affected organizations if a change, other than administrative or editorial is made to the WP after any concurrence signatures are obtained
- Obtain comments and concerns for the WP from representatives of the applicable organizations.
- Obtain signatures from representatives of the organizations designated as "Required" in the JHA performed in Chapter 3; these signatures **SHALL** be documented on the Cover Sheet

CHG-1

Concurrence/Approval Signatures indicate satisfaction by the signing organization that the WP contains sufficient analysis, documentation, and actions to satisfy the criteria of the graded approach concept with respect to the scope of the work.
If a SES or USQD is required, then the RM **SHALL** submit the WP for screening and place the SES in an appendix of the WP before issuing for work.

Screen the WP in accordance with 1-52000-ADM-02.01, *Independent Review Committee Requirements* and submit for IRC review as required.

The RM **SHALL** sign and date the WP cover sheet when all requirements for the approval of the WP are met.

3.4 Conduct of Work

The organization(s) performing the WP **SHALL** comply with the requirements of the COOP Manual for conduct of work and procedural compliance.

Upon completion of the WP, the Job Supervisor **SHALL** perform a PJR in accordance with the requirements stated in Chapter 11.

3.5 Periodic Review Requirements for Approved WPs/SWPs

It is not necessary to perform a periodic review every 90 days if the WP is not scheduled to be worked. The periodic review should only be performed prior to releasing the WP to the responsible organization.

If the work activity has not commenced within 90 calendar days of the RM approval on the WP Cover Sheet, or if the work activity has been delayed for a period of 90 calendar days or longer, then resubmit the WP to Planning for review.

The Planner **SHALL**:

- Review the WP for any changes that impact the work conditions, processes, type of equipment, hazards, and hazard controls as described in Sections 8, 9, or 10 of the WP
- Review Section 5 of the WP for any changes to the references listed which could impact the requested work in Sections 8, 9 or 10 of the WP
- Sign and date the Work Package Cover Sheet if the review determines that changes do not impact the requested work
- Process changes per Section 3.6, if the review determines that changes do impact the requested work, then

The RM **SHALL** then review, sign and date the WP, indicating that the review of the package was satisfactory.

3.6 Revisions and Changes

3.6.1 Revision and Change Determination

For those revisions where the scope, design intent, or hazard controls have changed, a new ASF **SHALL** be performed in accordance with Chapter 2.

The Initiator **SHALL** process a WPRR in accordance Appendix 4.4, if the requested change affects any of the following:

- Changes the scope or intent of the job
- Impacts criticality safety hardware, changes the intent of the SES/USQD, or impacts an AB Document or OSR/TSR
- Impacts or changes a hazard control measure identified on the Hazard Analysis or in the WP (e.g., changes to an ALARA review, etc.)
- Cancels an approved, in progress, WP in its entirety prior to the completion of work
- Changes system/component model number, material specification (that does not meet original fit, form or function as determined by Engineering), material certification or test data, or system component configuration
- Hold points, inspections, verifications and witness signoffs

Otherwise, the change is processed per Section 3.6.2.

Update the CBOM with the current WP revision number and add additional/revised testing for revisions affecting the CBOM

Changes affecting the working copy of SWPs could also affect the Master copy.

3.6.2 Pen and Ink, and Page Changes

Use Pen and Ink changes for minor items that do not meet the requirements of a revision. Use of white out (correction fluid) or correction tape is not allowed.

Pen and Ink changes **SHALL** be reviewed and concurred with by the affected organization(s).

Make Pen and Ink changes are made as follows:

- Draw a single line through the entry to be changed
- Make the desired entry into the WP
- Draw a vertical line in the right-hand margin next to the change
- Initial and date the change
- Record change, concurrence, and reason in the Work Package Status Log for WPs and Master SWPs

If the Pen and Ink change requires a page change:

- Replace original pages with revised pages (which includes the Work Package Status Log (WPSL).
- Insert additional pages, as required.
- Mark removed pages as *SUPERSEDED*.
- Place all removed pages in a separate Appendix.

3.7 Cancellation

Cancel approved, in progress, WPs/SWPs with a WPRR in accordance with Section 3.6.

Prior to canceling a work package, the Planner **SHALL**:

- Review the current status of work
- Add additional task steps to the WPRR to secure the job site

CHG-1

- Cancel material orders as follows:
 - Revise BOM or Master Agreement Order Receiving Form (MAORF), as appropriate, and mark "CANCEL ITEMS X-XX."
 - Forward a BOM copy to Procurement, or the MAORF to the cognizant credit card holder.

The RM **SHALL** verify that WP is not a commitment in PATS and cancel all engineering designs per DES-210 and cancel the WCF.

3.8 Closure

The Job Supervisor **SHALL**, within 90 days of completion of work:

- Ensure work, inspections, Engineering dispositions or Nonconforming Conditions, and testing required by the WP are completed and indicated in the WP
- If outstanding deficiencies are noted during the WP closure, which are **not** covered in the original scope of the WP, notify the RM for proper disposition
- Ensure all required documents are properly filled out and contained in the WP
- Complete the Job Supervisor closure section of the WP Cover Sheet,
- Issue a new WCF in accordance with Chapter 3 for all new or remaining open deficiencies
- Ensure all work and testing specified in the WP has been completed satisfactorily and documented in the WP as required

If a WP is written to address a Non-Conformance Report (NCR), then Engineering **SHALL** perform an operability assessment on components or systems prior to returning to service.

Engineering **SHALL** verify the following are completed and then complete the Engineering closure signature line of the WP Cover Sheet, as applicable:

- Perform a post modification walk down to redline drawings
- Redlines must include all administrative clarifications, minor design changes, and Engineering Change Request (ECR) field changes per the Site Engineering Requirements Manual, MAN-027-SERM
- Deliver redlined interim controlled drawings to Site Design Document Control

Quality **SHALL** ensure that required signatures and documents are included in the WP, requiring Quality concurrence per Chapter 3 and verify that:

- PMT is performed and documented
- Acceptance criteria are met
- An NCR has been submitted and dispositioned in accordance with approved procedures to resolve hardware/testing problems, as required
- Verify the completed WP meets the requirements for a quality record, in accordance with 1-V41-RM-001, *Records Management Guidance for Record Sources*.
- Complete the Quality Coordinator closure signature line of the WP Cover Sheet, Appendix 4.1, as applicable.

The RM then reviews the WP to ensure that all required reviews are complete and the required signatures are on the WP Cover Sheet, and approves the WP closure by signing the closure section of the WP Cover Sheet.

He/she **SHALL** ensure that the WCF is closed in the database.

APPENDIX 4.1 - WORK PACKAGE COVER SHEET

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
WORK PACKAGE-TYPE 1 COVER SHEET**

WORK CONTROL NO. _____ REVISION NO. _____

TITLE: _____

Planner: _____ / _____ / _____
Name Signature Date

CONCURRENCE:

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance and can be performed safely.

Responsible: _____ / _____ / _____
Organization Name Signature Date

H&S: _____ / _____ / _____
Name Signature Date

Rad Safety: _____ / _____ / _____
Name Signature Date

Engineering: _____ / _____ / _____
Name Signature Date

Quality: _____ / _____ / _____
Name Signature Date

ORC/PRC: _____ / _____ / _____
(Review Only) Initials ORC/PRC Meeting No. Date

APPROVED:
Responsible: _____ / _____ / _____
Manager (Rep) Name Signature Date

CLOSURE CONCURRENCE: (Only if Approved WP)

Based upon my personal review of this work package and inspection of the work site, all of the work and retest specified in this package has been satisfactorily completed.

Job Supervisor: _____ / _____ / _____
Name Signature Date

Engineering: _____ / _____ / _____
Name Signature Date

Quality: _____ / _____ / _____
Name Signature Date

CLOSURE APPROVAL:

Responsible: _____ / _____ / _____
Manager (Rep) Name Signature Date

APPENDIX 4.2 - STANDARD WORK PACKAGE COVER SHEET

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE STANDARD WORK PACKAGE COVER SHEET		
STANDARD WORK PACKAGE SERIAL NUMBER: _____ WORK CONTROL NO. _____ REVISION NO. _____		
TITLE: _____		
Planner:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
CONCURRENCE: Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance and can be performed safely.		
Maintenance:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
H&S:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
Rad Safety:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
Engineering:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
Quality:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
ORC/PRC: (Review Only)	_____ / _____ / _____ <small style="display: block; text-align: center;">Initials ORC/PRC Meeting No. Date</small>	
APPROVED:		
Responsible: Manager (Rep)	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
STANDARD WORK PACKAGE USE AUTHORIZATION: Use of the Standard Work Package is authorized for the work specified by the Work Control Form contained herein. Work must be started with 90 calendar days.		
Maintenance(Rep.) Management	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
CLOSURE CONCURRENCE: (Only if Approved WP) Based upon my personal review of this work package and inspection of the work site, all of the work and retest specified in this package has been satisfactorily completed.		
Job Supervisor:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
Engineering:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
Quality:	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	
CLOSURE APPROVAL:		
Responsible: Manager (Rep)	_____ / _____ / _____ <small style="display: block; text-align: center;">Name Signature Date</small>	

APPENDIX 4.2 - Standard Work Package Cover Sheet

Instructions for Completing SWP Cover Sheet

NOTE: *The format of the serial number is SWP-NN-XXXXX-XX where NN is the appropriate company number, building number, or RFETS for site-approved SWPs; XXXXX is a sequential number; and XX is the revision number.*

The Planner **SHALL**:

- Obtain the next sequential number, and record on the Cover Sheet.
- Develop the SWP Cover Sheet by entering the following information:
 - Work Control Number (WCN) from the applicable WCF
 - WP Title
 - Revision Number
 - Planner's Name
 - Include additional concurrence requirements in addition to those identified on the Cover Sheet, as required

Concurrence and approval signatures are obtained in accordance with Section 3.3.

Closure signatures are obtained in accordance with Section 3.8, Closure.

[illegible]

APPENDIX 4.4 - WORK PACKAGE REVISION REQUEST

WORK PACKAGE REVISION REQUEST			
STANDARD WORK PACKAGE SERIAL NUMBER: _____			
WORK CONTROL NO. _____		REVISION NO. _____	
TITLE: _____			
DESCRIPTION AND REASON FOR REQUESTED CHANGE(S): _____			
Originator:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
PLANNER: _____ REQUEST APPROVED _____ REQUEST DISAPPROVED			
REASON: _____			
Planner:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
CONCURRENCE:			
Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance and can be performed safely.			
Maintenance:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
H&S:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
Rad Safety:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
Engineering:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
Quality:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
ORC/PRC: (Review Only)	_____ <small>Initials</small>	_____ <small>ORC/PRC Meeting Number</small>	_____ <small>Date</small>
APPROVED:			
Responsible: Manager	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
STANDARD WORK PACKAGE USE AUTHORIZATION: Use of the Standard Work Package is authorized for the work specified by the Work Control Form contained herein. Work must be started with 90 calendar days.			
Responsible: Manager	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
CLOSURE CONCURRENCE: (Only if Approved WP) Based upon my personal review of this work package and inspection of the work site, all of the work and retest specified in this package has been satisfactorily completed.			
Job Supervisor:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
Engineering:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
Quality:	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>
CLOSURE APPROVAL:			
Responsible: Manager	_____ <small>Name</small>	_____ <small>Signature</small>	_____ <small>Date</small>

APPENDIX 4.4 - WORK PACKAGE REVISION REQUEST

Instructions for Completing WPRR

WPRRs are used when the requirements of Section 3.6. The form can be generated by the individual requesting the change, but is normally processed by the planner. The crafts have not been trained on completing this form or correctly entering changes. If the WPRR comes to the planner, it is completed as follows:

The Initiator **SHALL**:

- Complete the Initiator section
- Enter a description of the requested change(s) on the WPRR or on additional sheets that:
 - Include pages to be added to the WP, if required
 - Provide additional steps with required signatures at the appropriate locations in the body of the WP
 - Indicate justification for changes(s)
- Enter name, signature and date, and forward the completed WPRR to the responsible Planner

The Planner **SHALL** approve or disapprove the WPRR by verifying correct form and information, confirming the change is valid and necessary and marking the approved or disapproved boxes as appropriate, indicating the reason, and:

- Enter name, signature, and date
- Obtain original WP and prepare revised WPs including new pages and incorporate previous pen and ink changes
- Obtain concurrence and approval signature in accordance with Section 3.3, Concurrence and Approval
- Indicate the revisions on every affected page by:
 - Drawing a vertical line in the right hand margin next to the change
 - Entering the revision number
 - Initialing and dating the change
- Retain all pages replaced in a WP as a result of a revision in the work control history file or with the package in a separate Appendix and marked as *Superseded*

APPENDIX 4.5 – BILL OF MATERIAL (BOM) PROCESSING INSTRUCTIONS

PURPOSE

This Appendix discusses the methods and provides direction for developing and documenting lists of materials to be purchased for work. It also discusses the Master Agreement (MA) Subcontract procurement process which allows the purchase of safety related items via credit card.

Lists of Materials (BOM/CBOM/MAORF)

There are three methods of documenting the list of items/materials to be used on a job:

1. Bill of Material (BOM)
2. Consolidated Bill of Material (CBOM)
3. Master Agreement Order / Receiving Form (MAORF)

BOM

CHG-1 | The BOM may be used to initiate the list of materials for System Category (SC) 1 or 2, or SC3 WPs, but the final list is documented on the CBOM. For SC 4 WPs, the BOM is the final and only list of materials. BOMs are not used when items are purchased per the MA Subcontract procurement process (see MAORF discussion below), or when construction projects purchase items per CSI methods (see Chapter 6).

CBOM

The CBOM is an electronic form/data base. It is used for all SC 1 or 2, or SC 3 WPs except for items purchased using the MA Subcontract or CSI procurement processes. CBOMs may also be used for SC 4 WPs, if desired. The CBOM incorporates the BOM and is sent to Procurement to be used in the development of Purchase Orders (P.O.).

Master Agreement Order / Receiving Form (MAORF)

The Master Agreement (MA) Subcontract procurement process documents the list of required materials on the MAORF. This form is Appendix 1 of procedure 1-PRO-453, Master Agreement Subcontract Procurement.

Process Overviews

There are several changes in the commodities procurement process and COEM (DES-210 and 273) which directly impact BOM/CBOM/MAORF development. The following overview provides a brief description of these changes.

Master Agreement Subcontract Procurement

NOTE: *MA Subcontracts will cover the majority of commercial catalog items, with contracts for fasteners, pipe, valves, fittings, electrical commodities, chemicals and compressed gases expected to be fully implemented by the end of August, 1998. Items which are outside the scope of MA Subcontracts (for example, waste containers and custom design/build items) must still use the BOM/CBOM, I-Spec, P.O. procurement process.*

MA Subcontract procurement is a procurement process implemented by procedure 1-PRO-453, Master Agreement Subcontract Procurement. This process is greatly streamlined and allows for purchase of PL1 and 2 items via credit card, provided they are within the scope of an MA Subcontract (see note, above).

MA Subcontract procurement uses the Master Agreement Order / Receiving Form (MAORF) for documenting the list of items to be purchased. This single-page form replaces the BOM/CBOM, Purchase Requisition, I-Spec, Purchase Order, and Receiving Inspection Report Sheet (RIRS) and Quality Certification Inspection Requisition (QCIR) receipt inspection forms. The MAORF is intended to be used in lieu of the BOM/CBOM in the Work/Design Package, but items listed on the MAORF **may** also be listed on the BOM/CBOM if desired. Items purchased using the MA Subcontract process are considered PL 1 and 2 and **may** be used (in accordance with design) in SC 1 and 2, 3, and 4 applications. Items which are outside the scope of MA Subcontracts (for example, waste containers and custom design/build items) must still use the EBOM/CBOM, I-Spec, P.O. procurement process. Note also that MA-purchased items will be certified and green-tagged, (with the exception of chemicals – see Chemical Procurement, below), but will have the MA subcontract number entered on the green tag instead of the I-Spec and RIRS number.

Chemical Procurement

Chemical procurement is considered a subset of MA Subcontract procurement. It utilizes an MA Subcontract, but is initiated by contacting the Chemical Dispensary Team (CDT) and requesting the desired chemical. The CDT initiates the appropriate procurement documents and purchases chemicals in accordance with the Site Chemical Management Manual, 1-MAN-019-CMM-001. Chemicals do not pass through the normal commodity receipt inspection and green tagging certification process. Therefore, chemicals do not have green tags. The CDT tags chemicals with a small blue sticker labeled "Chemical Dispensary" and marked with a bar code and unique serial number for each item. For the purpose of Work/Design Package configuration control, end users shall obtain a copy of the completed Chemical Order Form from the CDT when the chemicals are issued and retain a copy with the Work/Design Package.

Item Equivalency Evaluation (IEE)

REQUIREMENT:

IEEs shall be performed for all items determined to be not like-for-like, intended for SC 1 and 2 applications, and having safety functions. IEEs are performed per Appendix 2 of procedure 2-C93-COEM-DES-273, Engineering Standards for Procurement. IEEs become part of the Work/Design Package, and the IEE number is noted in the CBOM item comment field.

DISCUSSION

The COEM has been changed to provide IEE methodology and logic, along with a revised IEE form. System/Building Engineers have full responsibility for performing IEEs. Material Engineering (Procurement Engineers) are no longer involved in IEEs, but **may** be consulted if desired.

Material Review (MR)

REQUIREMENT

Material Reviews shall be performed for all uncertified items intended for SC 1 and 2 applications, and having safety functions. MRs are performed per Appendix 3 of COEM-DES-273.

DISCUSSION

Material Reviews -- formerly called Material Review Requests (MRR) -- are now the responsibility of System/Building Engineers. This is because System/Building Engineers already have the item in hand, are familiar with the end use application and relevant concerns, and are co-located with inspection personnel. Consequently, the COEM has been revised to provide specific Material Review methodology

and logic, along with a revised MR Form. Material Engineering is no longer involved in MRs, but may be consulted if desired.

INSTRUCTIONS

Bill of Material (BOM) / Consolidated Bill of Material (CBOM)

NOTE: BOMs and CBOMs may not be required until after troubleshooting since material will be identified during the troubleshooting process. Therefore, it is permissible to prepare and approve a WP/SWP without a BOM or CBOM.

NOTE: Refer to the SERM for the definition of system categories.

NOTE: A review of onsite excess material or shop stock **Should** be performed prior to ordering new material.

BOMs/CBOMs should contain the following information to facilitate the expediting process:

- Work Control Number (WCN), WP title and revision
- Priority level
- System category
- Planner information (name and extension)
- Item description to include:
 - Item name
 - Size
 - Material
 - Standards (ANSI, ASTM, Plant Standards)
 - Description
- Manufacturer data, as appropriate, to include:
 - Name
 - Drawing number
 - Revision
 - Part number
 - Catalog reference
- Enter the quantity and unit measure to be included for each line item.
- Enter the supplier information, as appropriate, to include:
 - Name
 - Phone
 - Contact person
- I-specs for safety related items
- IEE numbers, if applicable, in the CBOM item comment field
- MR numbers, if applicable, in the CBOM comment field

The BOM Developer will:

[1] Develop and place a BOM or MAORF, as a minimum, for Category 4 systems in the WP as follows:

- Determine material requirements
- Complete a BOM MAORF
- Forward a completed copy of the BOM to Procurement for requisitioning and expediting if not using a credit card
- Forward the MAORF to the appropriate credit card holder for purchase

NOTE: The CBOM can be prepared using the latest revision to the Parts and Equipment Management System (PEMS):

[2] Develop and place a CBOM/MAORF for System Category 1, 2 and 3 in the WP.

- Forward the original design CBOM/MAORF to the Planner and a copy to Procurement for requisitioning and expediting
- Forward the MAORF to the appropriate credit card holder for purchase
- Identify additional material requirements and provide this information to Material Engineering for inclusion on the CBOM
- Place the CBOM/MAORF in the appropriate section of the WP

NOTE: The BOM or CBOM revision does not have to be the same as the WP revision number. Certain changes to BOMs and CBOMs may be accomplished under the provisions of the Pen and Ink Change Process. In this situation, a WP revision is not required.

This page intentionally left blank.

CHAPTER 5 - WORK PACKAGE - TYPE 2 PROCESS

1.0 PURPOSE

The purpose of this chapter is to provide the requirements to allow for the conduct of performing work using an Engineering Design Package (EDP) identified as a Type 2 WP.

2.0 OVERVIEW

This chapter provides the requirements for the development and performance of Type 2 WPs. This chapter also provides requirements for outside contractors performing work on Site to allow them to work to the WP they bid on, thereby reducing the overall cost and streamlining the process as well.

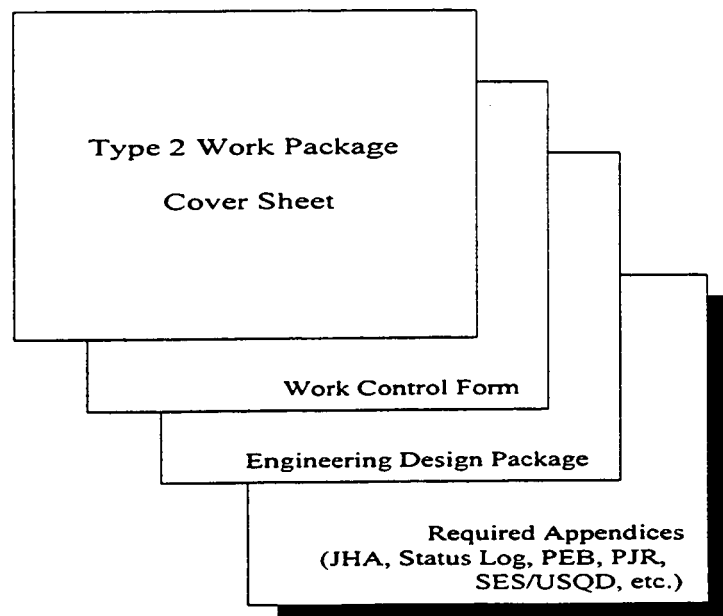
In order for this approach to work, a significant amount of coordination between the Engineer, Planner, Crafts, and Safety SMEs will be required during the design phase. The basic elements of Enhanced Work Planning (EWP): Line Management Support; Worker Involvement; Graded Approach; and Diverse Teams need to be applied throughout the process to ensure the WP is a quality document which can be worked on the floor.

The intent of this chapter is not to replace the Design-Basis process, but to enhance the design process to encompass the elements of EWP and the Site's ISMS.

Type 2 Work Package Summary:

The Type 2 WP provides an interim step that simplifies WPs requiring design by eliminating the need for developing another WP after the design phase is complete. This type of WP incorporates the elements of the Type 1 WP into the text of the EDP work instructions prepared per DES-210, as well as the addition of institutionalized hazard analyses and team based approach within an overall context of ISMS. The figure below shows what an actual Type 2 WP may look like.

Figure 5-1 – TYPE 2 WORK PACKAGE SUMMARY



3.0 INSTRUCTIONS

3.1 Initial Planning & Design Phase

The RM **SHALL** review the scope for the requested work identified on the WCF or Authorization Project. If the scope is not sufficient, develop a more detailed scope to ensure the planning and design phase will be adequately performed. This is also an essential element of the Site's ISMS, and the foundation for the success of the entire project. Much of the outcome of the design is based on the initial scope given to the Engineer. For construction projects, this is also essential in the bidding process, so every effort should be made to ensure the scope is sufficient and detailed enough to begin this process.

An engineering walk down of the requested activity is performed by Engineers, Planners, SMEs and Crafts. This **may** be completed concurrently with the development of the JHA. 1-V51-COEM-DES-210, *Design Process Requirements* provides further instructions for conducting a walk down.

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walk down and review available lessons learned from previous WPs.

3.2 WP Development

A Type 2 WP is essentially an EDP with the work execution elements of a Type 1 WP incorporated into the design. The elements such as JHA, work scope definition, precautions and limitations, prerequisites, special tools, work steps, hold points, etc., are developed as described in Chapter 4. The difference is that the planner works closely with the engineer to include these elements in the EDP, rather than separate sections of the WP. Appendices such as SES/USQD, JHA, NRWOL, PJR, etc. **Should** be attached to the EDP as described in Chapter 4.

The Engineer develops the EDP using the format described in 1-V51-COEM-DES-210, *Design Process Requirements*.

The WP Cover Sheet **SHALL** be used for documenting the approval signatures of all Type 2 WPs.

3.2.1 Bill of Material (BOM)/Consolidated BOM (CBOM)

Refer to Chapter 4, Appendix 4.5, for detail on preparing Bills of Materials.

3.2.2 Work Instructions

NOTE: *Appendices or sections should be added to the Type 2 WP to allow for the insertion of field generated paperwork and for logging the WP status.*

The Engineer and the Planner develop precautions and limitations that apply to the WP. Precautions alert document performers to required actions and conditions that represent potential hazards to personnel of possible damage to equipment, or that establish abnormal conditions. Limitations define boundaries that are **not** to be exceeded.

They also develop Initial Conditions/Prerequisites that apply to the WP. They **Should** consider the following in preparing initial conditions/prerequisites statements:

CHG-1

- The safety of personnel, the general public, and the environment
- The protection of equipment and material
- Inadvertent, incorrect or omitted actions that could cause system operation, shutdown or could result in OSR/TSR impact
- Limitations identified in approved vendor information and design documents
- Unusual alarms that could occur as a result of the performance of work
- Actions that could result in automatic shutdown of any engineered safety features
- The reduction of personnel or environmental exposure to radiation, contamination, electrical shocks, dangerous chemicals, fire hazards, confined spaces, and moving or rotating equipment to levels that are ALARA

If the work will affect the design, function or method of performing the function of a SSC or impact on TSR/OSR described in the AB, then the Engineer and RM **SHALL** determine the specific remedial actions and reference the applicable AB Document or DOE approved remedial actions. If the required actions are not specified in the AB Document and have not been approved, they must be documented and reviewed by Nuclear Safety and ORC/IRC. The Engineer and the Planner then incorporate the approved remedial actions into the WP.

They next develop job instructions, based on Skill-of-the-Worker, identified hazards, and task complexity, and include the following:

- Specific interim and final witness, inspection, or verification points, as identified by Engineering, Safety, or Quality
- Signatures are required for steps needing inspection, verification, such as witness points and verification of activities, or data collection
- Identification of steps that could initiate an equipment shutdown or transient or the initiation or interruption of any process action
- Identification of steps that inform the operations personnel of expected alarms or equipment operations
- Specific radiological control hold points, as identified by Radiological Safety
- Signature by SM or work authorizing authority authorizing activities which are sited or credited in AB documents

They also develop PMT requirements that ensure that the SSC is properly restored to its desired configuration.

3.3 Concurrence and Approval

Concurrence and approval **SHALL** be performed in accordance with the requirements outlined in 1-V51-COEM-DES-210, *Design Process Requirements* with the additional requirement that signatures are required from representatives of the organizations designated as "Required" in the JHA performed in Chapter 3. These signatures **SHALL** be documented on the Cover Sheet.

If a SES or USQD is required, then the RM **SHALL** submit the WP for screening and place the SES in an appendix of the WP before issuance. Additionally, the RM **SHALL** ensure that the WP is given an independent safety review per 1-52000-ADM-02.01, *Independent Review Committee*.

When all requirements for approval of the WP are met, then the RM **SHALL** sign and date the WP Cover Sheet.

CHG-1

3.4 Conduct of Work

NOTE: *The organization(s) performing the WP SHALL comply with the requirements of the COOP Manual for conduct of work and procedural compliance.*

Upon completion of the WP, the RM SHALL perform a PJR in accordance with the requirements stated in Chapter 11.

3.5 Periodic Review Requirements for Approved WPs

NOTE: *It is not necessary to perform a periodic review every 90 days if the WP is not scheduled to be worked. The periodic review should only be performed prior to releasing the WP to the Responsible Organization.*

If work has not commenced within 90 calendar days of the RM Approval on the WP Cover Sheet, or if the work has been delayed for a period of 90 calendar days or longer, then the RM SHALL resubmit the WP to Planning for review.

The Planner SHALL then review the WP for any changes that impact the work conditions, processes, type of equipment, hazards, and hazard controls as described in the work instructions. He/she then reviews the WP for any changes to the references listed which could impact the requested work in the work instructions. If the Planner's review determines that changes do not impact the requested work, then he/she SHALL sign and date the WP Cover Sheet indicating the review first. Second, the RM then reviews, signs and dates the WP, indicating that the review of the package was satisfactory. If the review determines that changes do impact the requested work, then changes SHALL be processed per Section 3.6

3.6 Revisions and Changes

For those revisions where the scope, design intent, or hazard controls have changed, a new ASF SHALL be performed in accordance with Chapter 2.

Revisions SHALL be made in accordance per DES-210 with the added requirement to include the Planning Team in the development review and approval of the change. The Planning Team SHALL review changes for impact relative to the JHA and work instructions and make appropriate modification to controls.

3.7 Cancellation

The Responsible Organization may cancel approved, in progress, Type 2 WPs in accordance with DES-210.

Additionally, the Engineer and Planner SHALL:

- Assure that cancellation does not adversely affect an existing PATS item
- Review the current status of work.
- Add additional task steps to the WP to secure the job site.
- Cancel material orders as follows:
 - Revise BOM or PBORF, as appropriate, and mark "CANCEL ITEMS X-XX"
 - Forward a BOM copy to Procurement, or the PBORF to the cognizant credit card holder
- Cancel the WCF

CHG-1

3.8 Closure

The Job Supervisor **SHALL**, within 90 days of completion of work:

- Ensure work, inspections, engineering dispositions or nonconforming conditions, and testing required by the WP are completed and indicated in the WP
- Notify the RM for proper disposition if outstanding deficiencies are noted during the WP closure, which are **not** covered in the original scope of the WP
- Ensure all required documents are properly filled out and contained in the WP
- Complete the Job Supervisor closure section of the WP Cover Sheet
- Issue a new WCF in accordance with Chapter 3 for all open deficiencies.
- Ensure all work and testing specified in the WP has been completed satisfactorily and documented in the WP as required.

If the WP is initiated to disposition an NCR, then Engineering **SHALL** perform an operability assessment on components or systems prior to returning to service.

Engineering then verifies a post modification walk down is performed to redline drawings. Redlined drawings are then delivered to Site Design Document Control and the Engineering closure line of the WP Cover Sheet is signed.

NOTE: *Redlines must include all administrative clarifications, minor design changes, and ECR field changes per 1-V41-COEM-DES-210, Design Process Requirements.*

Quality **SHALL**:

- Ensure that required signatures and documents are included in the WP, requiring Quality concurrence per Chapter 4
- As required, verify that a PMT is performed and documented, acceptance criteria are met, and an NCR has been submitted and dispositioned to resolve hardware/testing problems
- Verify the completed WP meets the requirements for a quality record, in accordance with 1-V41-RM-001, *Records Management Guidance for Record Sources*
- Complete the Quality Coordinator closure signature line of the WP Cover Sheet

The RM then reviews the WP to ensure that all required reviews are complete and the required signatures are on the WP Cover Sheet.

He/she approves the WP closure and signs the closure section of the WP Cover Sheet and closes the applicable WCF in the WCF database.

APPENDIX 5.1 - WORK PACKAGE COVER SHEET

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
WORK PACKAGE - TYPE 2 COVER SHEET

WORK CONTROL NO. _____
E. O. Number _____

REVISION NO. _____

TITLE: _____

Planner/Engineer: _____
Name / Signature / Date

CONCURRENCE:

Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance and can be performed safely.

Responsible: _____
Organization Name / Signature / Date

H&S: _____
Name / Signature / Date

Rad Protection: _____
Name / Signature / Date

Engineering: _____
Name / Signature / Date

Quality: _____
Name / Signature / Date

ORC/PRC: _____
(Review Only) Initials / ORC/PRC Meeting No / Date

APPROVED:

Responsible: _____
Manager (Rep) Name / Signature / Date

CLOSURE CONCURRENCE: (Only if Approved WP)

Based upon my personal review of this work package and inspection of the work site, all of the work and retest specified in this package has been satisfactorily completed.

Job Supervisor: _____
Name / Signature / Date

Engineering: _____
Name / Signature / Date

Quality: _____
Name / Signature / Date

CLOSURE APPROVAL:

Responsible: _____
Manager (Rep) Name / Signature / Date

CHAPTER 6 - WORK PACKAGE - TYPE 3 PROCESS

1.0 PURPOSE

The purpose of this chapter is to describe the work execution element of the Construction Project Management System (CPMS) for projects and provide guidance for the development of a Type 3 Work WP.

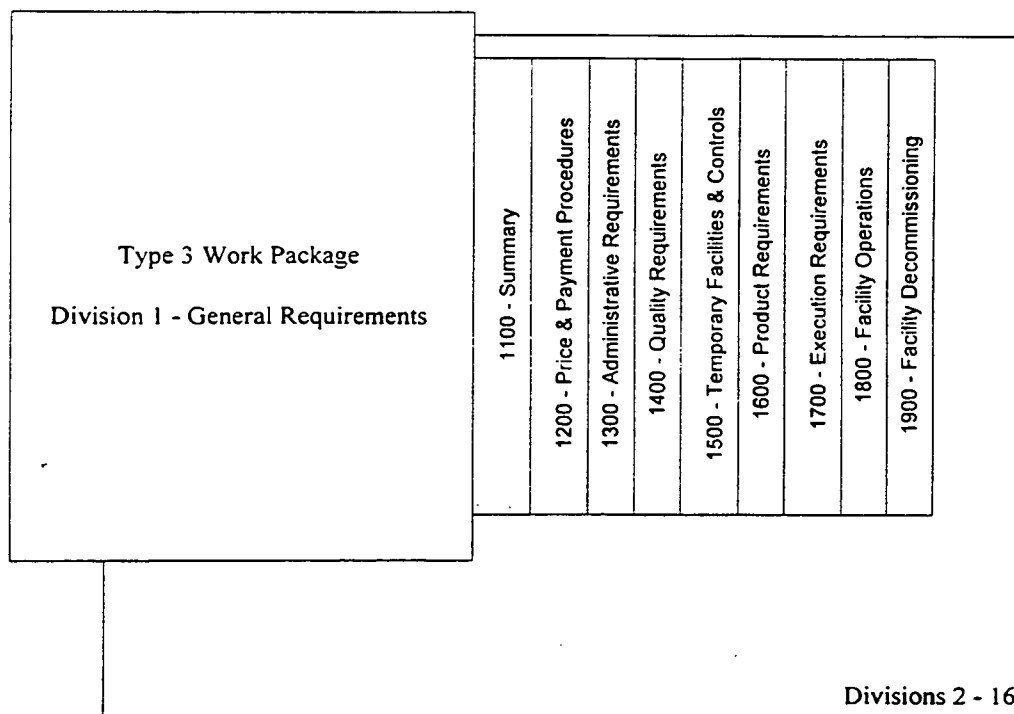
2.0 SCOPE

This chapter provides an overview of project management, construction management, and design practices for all construction projects authorized by the Site Chief Engineer and performed at the Site. It covers requirements, organization structure, and process flow used in project management, which includes engineering, construction, procurement, quality, and safety for this work process.

Type 3 Work Package Summary

The Type 3 WP provides the final method used to perform work requiring engineering design. It will be phased in from Type 2 WPs after the applicable training and process development has completed via approved pilot programs. This WP format incorporates all the elements of the Type 1 WP and DES-210 design into an industry standard format consisting of drawings and specifications per CSI. The elements of the Type 1 WP and DES-210 are included in Division 1 of the CSI format, as well as the hazard analyses. This WP format is consistent within the overall context of ISMS. The figure below shows what an actual Type 3 WP may look like.

Figure 6-1 – Type 3 Work Package Summary



3.0 APPLICABILITY

This chapter applies only to those construction activities approved for piloting by the SCE. It is the intent that all Davis-Bacon work will be performed using a Type 3 WP once the pilot period is over.

4.0 CONSTRUCTION PROJECT MANAGEMENT OVERVIEW

CHG-1 | DOE Orders 4700.1 and 430.1 describe the requirements for developing and implementing construction projects. 1-V51-COEM-DES-210, *Design Process Requirements* describes how the design work is to be performed onsite. This chapter provides the interface between design development and construction execution. Construction execution could include traditional construction, as well as certain D&D and Emergency Response (ER) activities.

Figure 6-2 illustrates terminology unique to each type of construction project planned for the Site and correlates the terminology with work activities in each phase.

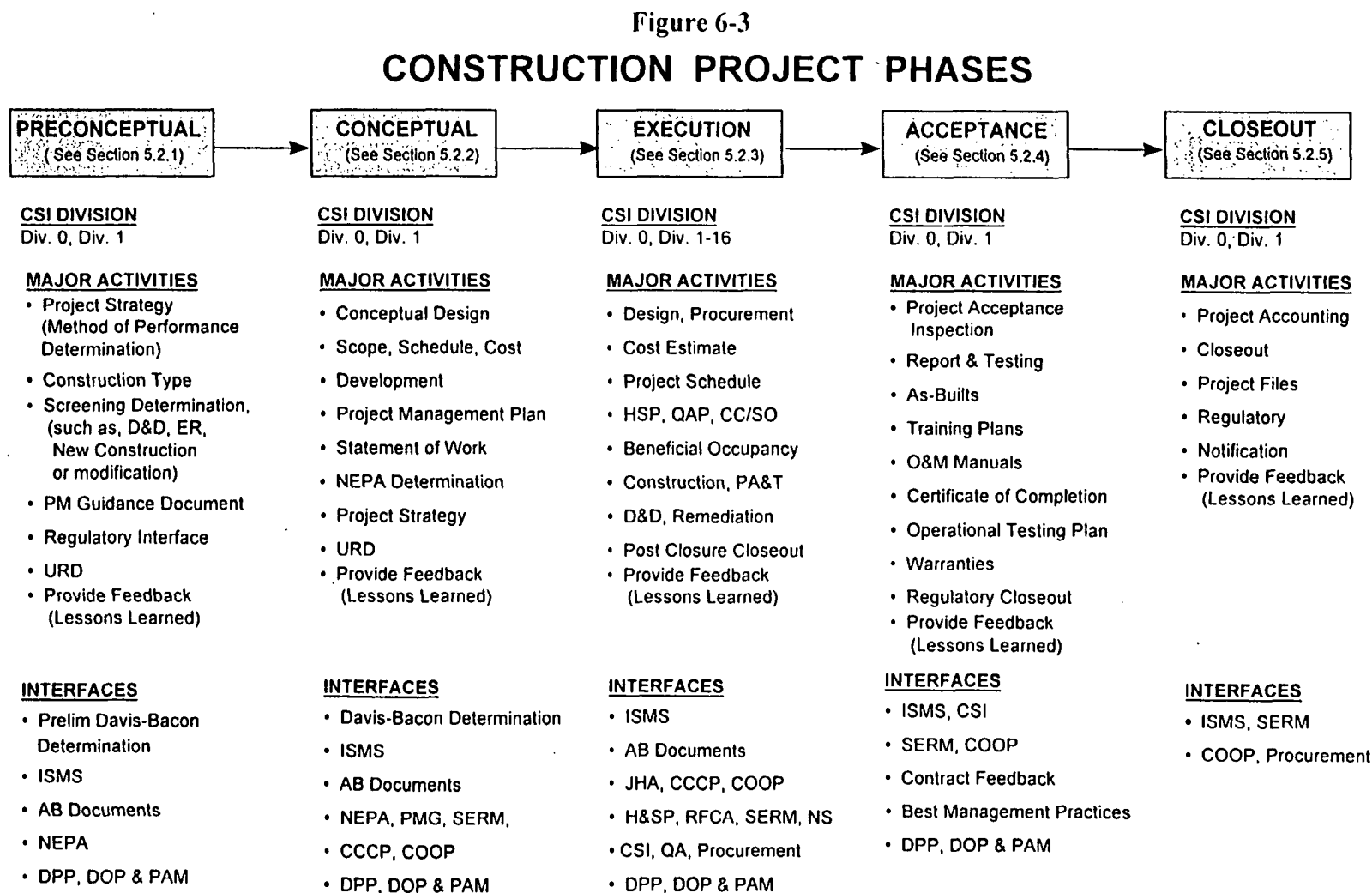
Figure 6-2

CONSTRUCTION PROJECT PHASE CORRELATION

DOE ORDER 4700.1 PHASES		NEW CONSTRUCTION/ MODIFICATION	REMEDIATION		D&D
			RCRA	CERCLA	
	PRECONCEPTUAL	<ul style="list-style-type: none"> User Requirement Document Conceptual Design Design Criteria 	<ul style="list-style-type: none"> RCRA Facility Assessment RCRA Facility Investigation Phase I & II 	<ul style="list-style-type: none"> Preliminary Assessment Site Inspection Remedial Investigation 	<ul style="list-style-type: none"> Surveillance & Maintenance Assessment & Characterization Environmental Review
	CONCEPTUAL	<ul style="list-style-type: none"> Preliminary Hazard Analysis 	<ul style="list-style-type: none"> RCRA Corrective Measures Study Public involvement Permit Modification 	<ul style="list-style-type: none"> Feasibility Study Public Involvement Record of Decision 	<ul style="list-style-type: none"> Feasibility Study Selection of D&D Alternative
	EXECUTION	<ul style="list-style-type: none"> Design Construction Acceptance 	<ul style="list-style-type: none"> RCRA Corrective Measures Post Closure 	<ul style="list-style-type: none"> Remedial Design Remedial Action Operation and Maintenance NPL Decision 	<ul style="list-style-type: none"> Special Maintenance Activities Engineering and D&D Operations Closeout Verification
	ACCEPTANCE	<ul style="list-style-type: none"> Closeout 			
	CLOSEOUT				

Work activities within each construction phase are developed in accordance with the format and structure of the CSI system. Numerous interfaces occur throughout the construction project life cycle (see Figure 6-3).

Figure 6-3 correlates the CSI divisions to the five construction project phases in DOE Order 4700.1 and gives examples of major activities and interfaces.



4.1 Construction Specification Institute

The CSI system provides the standard format for developing construction specifications. The *Construction Specifications Institute Manual of Practices* provides guidance on utilization of the 17 divisions of the CSI System. Divisions 0 through 16 are defined as follows:

- **Division 0** Documents generated by the procurement/subcontract group with assistance from project personnel. The subcategories of this division address topics such as invitation to bid, bid form, instructions to the bidders, and general contract conditions.
- **Division 1** General requirements. The subcategories of this division address topics such as Summary of Work, Site Coordination, field engineering, special project procedures, and quality control.
- **Divisions 2 through 16.** These divisions address engineering and construction technical specifications required for a particular project.

Construction specifications **SHALL** be developed using the standard format of the CSI system. Only those division subcategories that apply to the project should be used. Appendix 2 provides a list of the CSI divisions and titles in addition to subcategories for each division.

4.2 PROJECT PHASES

There are five phases of project development described in DOE Order 4700.1 and 2-F32-COEM-PMG-301, *Introduction to the Construction Management System* (see Figure 1). The five phases are as follows:

- Preconceptual Phase
- Conceptual Phase
- Execution Phase
- Acceptance Phase
- Close-out Phase

5.0 INSTRUCTIONS

A Type 3 WP is essentially a Davis-Bacon covered EDP with the work execution elements of a Type 1 WP incorporated into the specifications. This differs from a Type 2 WP in that a Type 3 uses specifications in the CSI format to communicate the required elements. The Planner must work closely with the engineer to include these elements in the specifications rather than as separate sections of the WP. The same elements such as JHA, work scope definition, precautions and limitations, prerequisites, special tools, etc. are developed as described in Chapter 4.

Additionally, Division 1 of the specifications **SHALL** include those elements of DES-210 normally included in an EDP, such as ECRs, Field Champs, Baseline Document Change Form (BDCF), etc. Appendices such as SES/USQD, JHA, NRWOL, PJR, etc., **Should** be attached to the EDP as described in Chapter 4.

5.1 Preconceptual Phase

Activities during the Preconceptual Phase focus on defining and documenting project needs. Generally this phase is preliminary and high level in nature and content. Depending on the complexity of the project effort, the level of detail for Preconceptual Phase activities and documentation varies. The activities include, but are not limited to:

CHG-1

- Technical functional requirements of the product or service
- Contamination assessment/remediation work plans
- Decommissioning operations plans
- Preliminary environmental strategy
- Estimated life-cycle cost and schedule of the project

Preliminary analysis to identify potential hazards and controls are often performed during this stage. Methods for identifying and analyzing hazards should include preliminary hazards analysis (PHA) and preliminary nuclear safety AB documentation in accordance with the NSM.

A User Requirement Document (URD) **SHALL** be prepared to establish scope, technical requirements, and regulatory guidelines (see Appendix 3). The PM and the user/sponsor organization **SHALL** approve the URD.

5.2 Conceptual Phase

The goal of the Conceptual Phase is to define the project scope and identify the resources required to accomplish the project. Technical, cost, and schedule baselines should be established. A project team is formed, and documentation developed during the Preconceptual Phase is expanded upon or refined. Preliminary analysis to identify potential hazards and controls should be expanded during the conceptual stage.

5.2.1 Conceptual Design

A Conceptual Design **SHALL** be prepared using information from the URD. Upon approval of the URD, Design Criteria **SHALL** be prepared. The Design Criteria provides baseline documentation support to the scope of work and is used to translate requirements in the URD and Conceptual Design into the physical requirements of the project. In addition, safety requirements, national codes and standards, Site technical standards and DOE Orders are identified.

For D&D and remediation projects, a Decommissioning Operations Plan (DOP), Proposed Action Memorandum (PAM), IM/IRA can be prepared in place of the URD, Conceptual Design, and Design Criteria.

5.2.2 Statement of Work

A SOW **SHALL** be prepared and provided to the procurement/subcontract organization for acquisition of a subcontractor. Guidance for developing a SOW is located in 1-W36-APR-111, *Acquisition Procedure for Requisitioning Commodities and Services*.

5.2.3 Project Management Plan

A Project Management Plan (PMP) **SHALL** be developed in accordance with 3-K78-COEM-PMG-323, *Preparation of Project Management Plan/Work Package*. The PMP **SHALL** include a WBS for the project in accordance with 3-L01-COEM-PMG-317, *Work Breakdown Structure*.

5.2.4 Method of Performance

A PMP can require additional conceptual documentation to properly describe a project such as:

- Project-specific Quality Assurance Plan (QAP)

CHG-1

- Responsibility assignments
- Schedules and major milestones
- Project organization
- Project reporting and review requirements
- Project Budget and Cost Plan
- Quality Control Plan
- Inspection Plan

A Method of Performance determination **SHALL** be made. The PM **SHALL** provide a detailed outline depicting how the project will be executed. Methods of Performance and the associated documentation required for each method are as follows:

- **Design/Build Method:**
Acquisition of a single subcontractor to provide both the design services and the construction. When a design/build subcontractor service is required, the PM develops a comprehensive SOW supported by the URD and/or Conceptual Design and/or Design Criteria documentation.
- **Design-Bid-Build Method:**
Acquisition of a subcontractor for design services. With the acquisition of design services, the contractor develops a comprehensive SOW supported by the URD and/or Conceptual Design and/or Design Criteria documentation. Acquisition of a separate subcontractor to execute an existing design or acquisition of a subcontractor for the construction of an existing design requires development of the design package that includes drawings, specifications in the CSI format, schedules, and any other applicable information.

5.3 Execution Phase

5.3.1 Procurement

Division 0 of the CSI system has strict coding for documentation required for the bidding process. The contractor procurement group establishes application of Division 0. The PM **SHALL** provide applicable documentation to the Procurement/Subcontract Group for acquisition of services. Procurement **SHALL** be in compliance with the requirements of the Federal Acquisition Regulations (FAR) and DOE Orders.

5.3.2 Preliminary Design (Title I)

Preliminary Design (Title I) is not required for all projects; however, it **may** be used to further define and control the scope of work by performing some or all of the following activities:

- Define the system operating performance parameters
- Complete analysis to identify potential hazards and controls
- Develop design basis documentation and establish reference codes and standards
- Develop the preliminary drawings including flowsheets, site plans, configurations and layouts
- Prepare preliminary or outline specifications in CSI format
- Develop preliminary nuclear safety AB documentation, provide information to produce a construction cost estimate and construction schedule that establishes or reconfirms the control budget and schedule for the overall project

If a preliminary design package is developed, the package **SHALL** be reviewed and approved in accordance with DOE Order 4700.1 and the project SOW

5.3.3 Definitive Design (Title II)

The subcontractor **SHALL** prepare the definitive design package and/or construction documents according to the SOW. This includes but is not limited to, the following:

- Final design calculations
- Final design drawings
- Final construction specifications
- Final hazards analysis and/or nuclear safety AB documentation

The definitive design package **SHALL** be reviewed and approved in accordance with DOE Order 4700.1 and the project SOW.

5.3.4 Integrated Safety Management

During the execution phase, the elements of ISM must be seamlessly integrated into the project. The hazards analysis must be performed in parallel with the design to ensure that to the greatest extent possible hazards are mitigated or eliminated through design up front rather than administratively controlled later on.

The PM **SHALL** ensure that the following actions are taken to build a complete Type 3 WP:

- Complete a WP Cover Sheet including all needed approvals
- The activity is screened per Chapter 2 and the ASF is included in the WP
- A JHA is performed per Chapter 4 and included in the WP
- Nuclear safety analysis, IHA and ISR are performed. The Nuclear Safety Analysis, IHA and ISR are performed. The nuclear safety analysis/SES/USQD and ISR are referenced in the WP. The IHA is performed per Chapter 3 and is attached to the WP.

5.3.5 Construction (Title III)

The Contractor's Technical Representative (CTR) overseeing the construction **SHALL** ensure that Division 1 requirements are enforced (also see 1-W36-APR-111 for CTR responsibilities).

Health Safety and Quality Planning

Project-specific Health and Safety Plans (HASPs) and QAPs, if required, **SHALL** be submitted by the subcontractor to the contractor. The contractor **SHALL** approve all HASPs and QAPs prior to starting any construction work.

Project-specific HASPs submitted by the subcontractor **SHALL** include a JHA that addresses Division 1, Section 01360, *Subcontractor Health and Safety Requirements* as supplied by the contractor (see Appendix 2).

A project-specific QAP **SHALL** be developed in accordance with the *Site Quality Assurance Manual*.

Construction Review

Prior to actual construction, the completed design, including project specifications, **SHALL** be reviewed by the project team for completeness and continuity of work. The CTR and the PM will direct this review. The CTR and PM **SHALL** ensure the following reviews are performed:

- SES or USQD in accordance with the NSM
- ISR in accordance with 1-52000-ADM-02.01, *Operations Review Requirements*

Construction Oversight

The CTR **SHALL** ensure that the subcontract activities are performed in accordance with the SOW, drawings, and specifications. This responsibility **may** be delegated to appropriate contractor project management personnel.

Inspection/Testing

Inspection and testing of specified items, services, and processes **SHALL** be conducted in accordance with criteria stated in the contract drawings or specifications. When hold points are specified, work **SHALL** not proceed until satisfactory completion of the tests or inspections or unless it is approved in writing by the contractor.

Training

Some projects warrant special training of Site personnel to operate a facility or portions of the facility/equipment. Requirements for special facility/equipment training **SHALL** be as specified in the SOW. Training requirements **SHALL** be defined in Division 1 of the CSI system.

Facility Transfer

Interim and final transfer including beneficial occupancy **SHALL** be conducted accordance with 4-17C-COEM-CMG-417, *Construction Close-out*.

Documentation

Subcontractor construction records **SHALL** be managed in accordance with 1-V41-RM-001, *Records Management Guidance for Records Sources*.

5.4 Acceptance Phase

Upon acceptance that the work is complete and the obligations of the SOW have been met, the contractor **SHALL** submit written notice of project acceptance to the subcontractor. If the work is unacceptable, the contractor **SHALL** provide written notice to the subcontractor stating reasons for non-acceptance of the work. The project **SHALL** not be accepted until necessary corrections are made and verified by the contractor.

5.5 Close-out Phase

When all construction activities are completed and closed, the Project Engineer and PM **SHALL** coordinate activities with the assigned Procurement Officer and the accounting office to ensure that all requirements have been satisfactorily met and final payments made.

Each project has unique requirements for final close-out. The following are examples of typical project requirements for close-out:

- Project files are consolidated and submitted to Site Design Document Control
- Final project close-out documentation is completed

- Accounting close-out is completed
- Final cost report is completed
- Applicable permits and licenses are issued
- Operations procedures are completed
- Training requirements are completed
- Purchase orders are completed
- As-built drawings are complete and submitted to Site Design Document Control
- Feedback (Lessons Learned) is complete
- Charge number authorization requests are finalized
- Maintenance notifications for required maintenance activities are completed

APPENDIX 6.1 - ORGANIZATION OF CSI DOCUMENTS

Page 1 of 2

Construction specifications are organized into Divisions 1 through 16 in accordance with guidelines of the Construction Specifications Institute. A more detailed breakdown of subsections that **may** be used within each of the divisions, in addition to format requirements for pages and sections, is included in the *Construction Specifications Institute Manual of Practice*.

Bidding Requirements, Contract Forms, and Conditions of the Contract - Division 0

Specifications - Divisions 1-16

Division 1 - General Requirements

- 01100 Summary**
 - 01110 Summary of Work
 - 01120 Multiple Contract Summary
 - 01140 Work Restrictions
 - 01180 Project Utilities Sources
- 01200 Price and Payment Procedures**
 - 01210 Allowances
 - 01230 Alternates
 - 01240 Value Analysis
 - 01250 Contract Modification Procedures
 - 01270 Unit Prices
 - 01290 Payment Procedures
- 01300 Administrative Requirements**
 - 01310 Project Management and Coordination
 - 01320 Construction Progress Documentation
 - 01330 Submittal Procedures
 - 01350 Special Procedures
 - 01360 Subcontractor Health and Safety Requirements
- 01400 Quality Requirements**
 - 01410 Regulatory Requirements
 - 01420 References
 - 01430 Quality Assurance
 - 01450 Quality Control
- 01500 Temporary Facilities and Controls**
 - 01510 Temporary Utilities
 - 01520 Construction Facilities
 - 01530 Temporary Construction
 - 01540 Construction Aids
 - 01550 Vehicular Access and Parking
 - 01560 Temporary Barriers and Enclosures
 - 01570 Temporary Controls
- 01500 Temporary Facilities and Controls (continued)**
 - 01580 Project Identification
- 01600 Product Requirements**
 - 01610 Basic Product Requirements
 - 01620 Product Options
 - 01630 Product Substitution Procedures

- 01640 Owner-Furnished Products
- 01650 Product Delivery Requirements
- 01660 Product Storage and Handling Requirements
- 01700 Execution Requirements**
 - 01710 Examination
 - 01720 Preparation
 - 01730 Execution
 - 01740 Cleaning
 - 01750 Starting and Adjusting
 - 01760 Protecting Installed Construction
 - 01770 Close-out Procedures
 - 01780 Close-out Submittals
- 01800 Facility Operation**
 - 01810 Commissioning
 - 01820 Demonstration and Testing
 - 01830 Operations and Maintenance
 - 01890 Reconstruction
- 01900 Facility Decommissioning**

Divisions 2 - 16 (For subcategories, see CSI Master Format list)

Division 2 - Site Construction

Division 3 - Concrete

Division 4 - Masonry

Division 5 - Metals

Division 6 - Wood and Plastic

Division 7 - Thermal and Moisture Protection

Division 8 - Doors and Windows

Division 9 - Finishes

Division 10 - Specialties

Division 11 - Equipment

Division 12 - Furnishings

Division 13 - Special Construction

Division 14 - Conveying Systems

Division 15 - Mechanical

Division 16 - Electrical

APPENDIX 6.2 - USER REQUIREMENT DOCUMENT

The purpose of the URD is to establish scope, technical requirements, and regulatory guidelines D&D, new or modified construction, and remediation projects. The URD defines the criteria for establishing a technical project baseline. The URD provides the limits that govern the design for a complete, safe, and operable facility that is adequate for the intended purpose.

The URD is prepared by the user/sponsor organization with the assistance of the PM and Project Engineer (PE).

USER REQUIREMENT DOCUMENT DEVELOPMENT

The following sections are addressed if applicable to the work. The following sections are examples of what might be required. This list is not all-inclusive. It is the responsibility of the user/sponsor, PM and PE to provide the actual requirements to reflect the specific needs of the project.

FACILITY REQUIREMENTS

New Facility:

- Describe the purpose of the facility
- Identify the proposed location
- Indicate the size required
- Determine if single or multi-storied
- Determine how the space will be utilized
- Determine the number of people that will work in the facility
- Identify whether there are possible future plans for the facility
- Identify the proposed location
- Determine how large the facility needs to be in terms of square footage
- Describe any demolition that might be required in detail
- Describe the new facilities in the existing building and provide a proposed layout if equipment is to be installed
- Describe restrictions, if any, that might impede the floor plan
- Describe the types of spaces the building will require, such as offices or storage areas
- Determine what the needs are
- Determine how many people will work in the building
- Address future plans in addition to special features the facility needs

Existing Facility Modification:

- Describe the status of the building such as operating nuclear, nuclear in deactivation, decontamination, or Special Nuclear Material (SNM) removal.

PROCESS REQUIREMENTS

- Develop a complete description of the major elements of the process including inputs and outputs required, if available
- Request a process flow diagram with a material balance
- Provide normal operating and maximum rates
- Define the need for excess capacity

D&D REQUIREMENTS

- Describe the D&D work including the levels, types, and locations of contamination, methods to be employed in the deactivation of equipment and processes, the level of decontamination required, volumes, types, and methods for handling the various types of wastes encountered and/or generated.
- Include methods for isolating utilities, processes, and systems so that they can be shut down.

UTILITY REQUIREMENTS

- Describe what type of utilities will be required, the volumes, and where they might be available
- Include a location plan showing the existence of services
- Define any special services, electrical backup, Uninterruptable Power Supply (UPS), dual power feeds, and any special conditions such as temperature, pressure, dew point and humidity
- For D&D projects, describes how utility systems will be demobilized and decommissioned depending on a plan for staged shut-down of the overall facility

DESIGN REQUIREMENTS

- Describe the process and the major equipment involved in that process including size, capacity, type driver, material of construction, manufacturer, model number, and any other appropriate information. Provide information on how the equipment, process will be controlled. Will redundant equipment be required, and if so describe.
- Complete the product requirements include sampling and testing of process streams, if applicable.
- Identify the System Categories and Performance Categories prior to the start of design.

QUALITY ASSURANCE (QA)

- Describe the QA objectives during design, construction, start-up, testing, operations, and D&D.

OPERATING AND MAINTENANCE REQUIREMENTS

Operations:

- Describe the operating philosophy for the facility.
- Determine whether the facility will operate on a continuous basis.
- Determine if uninterrupted service is required.
- Describe start-up, normal operations, and shut-down conditions.
- Describe the need for workforce training, if applicable, and how it will be done.

Maintenance:

- Describe the maintenance requirements for the equipment installed including normal and preventative maintenance needs
- Describe the need for special tools and/or training
- Determine how maintenance will be performed in areas of high radiation and/or hazardous wastes
- Determine whether equipment or process downtime is an item of major concern.

SAFETY AND HEALTH REQUIREMENTS

Radiological Work:

- Describe the process and need for radiological controls and the impact upon facilities, workers, and the environment
- Include how those impacts would be mitigated

Nuclear Safety Analysis:

- Determine the need for development of a complete Nuclear Safety Analysis that would address the presence of radiological and/or toxic material hazards
- Describe methods to be employed to minimize exposure levels to allowable limits
- Describe the need for criticality safety controls

Fire Protection:

- Describe the potentials for fire hazards in the facility and how those hazards will be mitigated
- Determine whether special fire protection systems or requirements will be needed
- Describe fire protection necessary for activities during the D&D of a facility

Industrial Safety & Industrial Hygiene:

- Describe any Industrials Safety and Industrial Hygiene hazards that might occur during D&D, construction, and operations of the facility and the expected plans or methods to eliminate or minimize those hazards

SAFEGUARDS AND SECURITY REQUIREMENTS

- Describe how this project will impact the Safeguards and Security programs of SNM and the accountability of that material
- Determine whether classified documents or information will be generated as a part of this project. If so describe

WASTE MANAGEMENT

- Provide a complete description of any wastes that could be generated as part of the implementation and execution of this project
 - Include volumes, form, and type of wastes and the disposal of those wastes on an interim and permanent basis
- Describe any regulatory restrictions and requirements

PROJECT EXECUTION IMPACTS

- Describe anticipated interfaces and impact areas with other activities on Site and in the work area.
- Describe the impact of other activities on the use of support services during D&D, new or modified construction, and redemption activities.
- Determine whether there will be special requirements for communications in the facility or on Site during D&D, new or modified construction, redemption, and operations.

CHG-1

SPECIAL REQUIREMENTS

- Describe the need for special requirements that have not been addressed in other areas of this document

CHAPTER 7 - TECHNICAL PROCEDURES

1.0 PURPOSE

The purpose of this chapter is to provide the requirements for the development and performance of Technical Procedures (TPs) as defined in the SDRM.

2.0 DISCUSSION

Although the development and use of TPs is not new to this Site, it is new to integration within the IWCP process. The reason it has been added to the IWCP is to ensure that the IWCP encompasses ALL work accomplished onsite. The format and development criteria defined in the SDRM will be referenced in this chapter to ensure a consistent format for all Site procedures. The process described in this chapter will ensure the TP is developed using the elements of the ISMS.

The use of Technical Operations Orders (TOOs), as defined by COOP Manual is also covered by this chapter. For ease of formatting, when referencing the SDRM within this chapter, the COOP manual applies when a TOO is used instead of a TP.

3.0 INSTRUCTIONS

3.1 Initial Procedure Development Phase

The RM and Procedure Writer (PW) review the scope for the requested work identified on the WCF. If the scope is not sufficient, develop a more detailed and concise scope to ensure the TP development will be adequately performed. It is essential to ensure the scope is adequate to conduct the development phase of the TP. This is also an essential element of the Site's ISMS, and the foundation for the success of the entire project

They then complete a Document Change Form (DCF) to obtain authorization for the Technical Procedure development.

NOTE: *Every effort should be made to ensure the crafts and/or operators performing the work are active participants in the walk down process.*

The Planning Team performs a walk down of the requested activity. This should be completed concurrently with the development of the JHA in Chapter 3.

Walk downs **Should** be completed in a team environment and include:

- Personnel familiar with the area and equipment
- SMEs for the applicable safety or management programs
- Craftsmen and equipment operators
- Any other supporting organizations

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walk down and review available lessons learned from previous WPs.

CHG-1

A JHA **SHALL** be performed in accordance with Chapter 3 and retained in the procedure history file.

3.2 TP Development

The PW develops the TP using the format described in the SDRM, while the COOP Manual is used for TOOs.

If the work will affect the design, function or method of performing the function of a safety SSC or TSR/OSR described in the safety analysis or other information relied on as the AB, then the RM determines the specific remedial/required action and references the applicable AB Document or DOE approved remedial/required actions.

If the remedial/required actions are not specified in the AB Document and have not been approved, they must be documented and reviewed by Nuclear Safety and ORC/IRC.

The PW then develops job instructions, based on Skill-of-the-Worker, identified hazards, and task complexity. He/she develops the testing requirements that ensure the SSC is returned to its desired configuration and incorporates specific radiological control hold points, as identified by Radiological Safety.

3.3 Concurrence and Approval

Concurrence and approval **SHALL** be performed in accordance with the requirements outlined in the SDRM. Additionally, the PW **SHALL** obtain signatures from representatives of the organizations designated as "Required" in the JHA.

Concurrence/Approval Signatures indicate satisfaction by the signing organization that the TP contains sufficient analysis, documentation, and actions to satisfy the criteria of the graded approach concept with respect to the scope of the work.

If a SES or USQD is required, then submit the TP for screening and place the SES/USQD in the procedure history file.

Screen the TP in accordance with 1-52000-ADM-02.01, *Independent Review Committee Requirements* and submit for IRC review as required.

When all requirements for approval of the TP are met, the RM signs and dates the TP.

Note: It is the RMs responsibility to assure that classification requirements are met.

3.4 Conduct of Work

NOTE: *The organization(s) performing the TP will comply with the requirements of the COOP Manual for conduct of work and procedural compliance.*

Upon completion of the TP, the Job Supervisor **SHALL** perform a PJR in accordance with the requirement stated in Chapter 11.

C H G - 1

3.5 Revisions and Changes

NOTE: *For those revisions where the scope, design intent, or hazard controls have changed, a new JHA will be performed in accordance with Chapter 3.*

The revision and change process **SHALL** be in accordance with the requirements identified in the SDRM for technical procedures.

3.6 Closure

The closure process **SHALL** be in accordance with the requirements identified the SDRM.

The RM **SHALL** close out the WCF in the WCF Database. This **may** be performed once the TP has been approved if the TP will be used for a reoccurring process.

This page intentionally left blank.

CHAPTER 8 - PREVENTIVE MAINTENANCE

1.0 PURPOSE

This chapter describes the requirements for the development of Preventive Maintenance Work Package (PMWP) and the performance of Preventive Maintenance Work Orders (PMOs).

2.0 DISCUSSION

This process ensures the elements of the Site's Integrated Safety Management System (ISMS) are followed. This process relies heavily on the skill of the craft, but should in no way compromise the safety of the worker or public, or protection of the environment.

3.0 INSTRUCTIONS

3.1 Development of PMWPs

NOTE: *The team assembled to plan the work, e.g., SMEs, engineers, floor level workers, planners, etc., **Should** participate in walk downs. The level of participation should be graded to the complexity, hazards level, and uncertainty of the task.*

The Planner, Responsible Organization, User and SMEs assigned perform a walk down of the requested activity. This **Should** be completed concurrently with the development of the JHA and IHA (as required). The walk down **Should** include inspection of the structures, systems, components and work environment related to the proposed work activity.

The walk down **Should** be performed by personnel familiar with the area and equipment, SMEs, craftsmen, equipment operators and any other supporting organizations.

The Planning Team **SHALL** refer to appropriate drawings and other technical data before and during the walk down and review available lessons learned.

The Planner completes a PMWP Cover Sheet and develops the PMWP in accordance with the instructions in Appendix 8.2.

3.2 Concurrence and Approval

The Planner and RM sign and date the PMWP Cover Sheet.

If the work does NOT require H&S, Engineering, Radiological Controls, or Quality concurrence in accordance with Chapter 3, then mark the signature line(s) N/A.

If a change, other than administrative or editorial, is made to the PMWP after any concurrence signatures are obtained, then the RM **SHALL** delete all previous concurrence signatures and obtain concurrence signatures again.

He/she then obtains comments and concerns for the PMWP from representatives of the applicable organizations.

He/she then obtains signatures from representatives of the organizations designated as "Required" in the JHA performed in Chapter 3. These signatures **SHALL** be documented on the PMWP Cover Sheet.

If a SES or USQD is required, then the RM submits the PMWP for screening and places the SES in an appendix of the PMWP before issuing for work

Screen the PMWP in accordance with 1-52000-ADM-02.01, *Independent Review Committee Requirements* and submit for IRC review as required.

When all requirements for approval of the PMWP are met, then the RM signs and dates the WP Cover Sheet and identifies the PMWP start date and frequency and returns the approved PMWP to PM Coordinator.

The PM Coordinator forwards a completed Preventive Maintenance Change Request (PMCR) to the EM/PM Administrator with the following information:

- PMWP control number, or revision number and date
- PMWP frequency
- First execution date
- Equipment description
- Lead craft and specific number of required craft(s) or support personnel

He/she then forwards the approved PMWP to the Planner who forwards the approved PMWP and associated developmental materials to Document Control. This information will be separated and stored in two files: working and history.

- Working file contains a copy of the original PMWP.
- History file contains the original PMWP, developmental references, SES/ORC/PRC documentation (if applicable), comment resolution sheets, initial ASF/JHA, as applicable etc.

Document Control then process the PMWP in accordance with Document Control procedures and the EM/PM Administrator updates the Maintenance Management System (MMS) database, as necessary.

The RM **SHALL** assure periodic review of WP.

3.3 PM WP Execution

The PM Coordinator **SHALL** print PMO reports and obtain working copies of PMWP from Document Control and forward PMOs and PMWPs to the applicable department for execution.

If the work will affect the design, function or method of performing the function of a safety SSC or TSR/OSR described in the safety analysis or other information relied on as the AB, then the RM **SHALL** determine the specific remedial action and reference the applicable AB Document or DOE approved remedial actions.

If the required actions are not specified in the AB Document and have not been approved, they must be documented and reviewed by Nuclear Safety and ORC/IRC.

The Job Supervisor performs a walk down and JHA in accordance with the following:

CHG-2

- 1) If the PMWP meets the criteria of Minor Maintenance, as defined in Chapter 2, and has a periodicity less than "Annually", then perform the hazard analysis in accordance with Chapter 9, Minor Maintenance. Chapter 9, Appendix 9.2 provides a Hazard Identification Matrix with the corresponding work activity description listed in Appendix 9.1 to aid supervisors and workers in identifying the applicable hazards and controls. If the PMWP activity is not listed in Appendix 9.1, then a JHA **SHALL** be performed in accordance with Chapter 3.
- 2) If the PMWP does not meet the criteria of Minor Maintenance, as defined in Chapter 2, but has a periodicity less than "Annually", then a JHA **SHALL** be performed in accordance with Chapter 3. However, this JHA **may** be used for future PMWPs provided that the conditions haven't changed.
- 3) If the PMWP has a periodicity of "Annual" or greater, then a JHA **SHALL** be performed in accordance with Chapter 3 each time the PMWP is performed.

He/she conducts a Pre-Evolution Briefing or a Job Task Briefing as required by the COOP Manual and executes the PMWP.

NOTE: *The maintenance organizations performing the PMWP **SHALL** comply with the requirements of the COOP Manual for conduct of work and procedural compliance.*

He/she performs the close-out review of PMWP and forwards the completed PMWP and PMO to PM Coordinator for PMO close-out.

As applicable, he/she initiates a WCF to correct discrepancies outside the scope of the PM WP.

The PM Coordinator then closes out PMO in MMS database as applicable, files the PMWP and PMO and initiates a PMCR, if needed.

3.4 Revisions and Changes

3.4.1 Revision and Change Determination

NOTE: *Forwarding a Preventive Maintenance Change Request (PMCR) to planning will ensure that the master PMWP is updated to reflect the required change.*

If the requested change affects any of the following, then the Initiator **SHALL** process a PMCR in accordance with Appendix 8.3:

- Changes the scope and /or the design intent
- Impacts criticality safety hardware, changes the intent of the SES/USQD, or impacts an AB Document or Limiting Conditions of Operation (LCO) requirement
- Impacts or changes a hazard control measure identified in the PM WP

Otherwise process per Section 3.4.2. below.

CHG-2

3.4.2 Pen and Ink, and Page Changes

Use Pen and Ink changes for items that do not meet the requirements of a revision. Pen and Ink changes must have the concurrence of the organization the change affects.

NOTE 1: *Use of white out (correction fluid) or correction tape is not allowed.*

Make pen and ink changes to working copy with an indelible ink pen as follows:

- Draw a single line through the entry to be changed
- Make the desired entry into the PMWP
- Draw a vertical line in the left-hand margin next to the change, initial and date the change, and annotate PMCR number
- Complete PMWP
- Initiate PMCR in accordance with Appendix 8.3 in order to update original PM WP in document control

3.4.3 PMCRs for MMS Database Changes (e.g.: scheduling , frequency, craft changes, cancellations and deferrals)

The Initiator **SHALL** complete PMCR per Appendix 8.3.

APPENDIX 8.1 - PREVENTIVE MAINTENANCE WORK PACKAGE COVER SHEET

Page 1 of 1

ROCKY FLATS PLANT PREVENTIVE MAINTENANCE WORK PACKAGE (PM WP) COVER SHEET			
PM WP CONTROL NO. _____ REVISION NO. <u>0</u>			
TITLE: _____			
PLANNER:	_____ Name	_____ Signature	_____ Date
CONCURRENCE: Based on my personal review, I agree that the work described in this package meets technical requirements under my cognizance and can be performed safely.			
Maintenance:	_____ Name	_____ Signature	_____ Date
H&S:	_____ Name	_____ Signature	_____ Date
Rad Safety:	_____ Name	_____ Signature	_____ Date
Engineering:	_____ Name	_____ Signature	_____ Date
Quality:	_____ Name	_____ Signature	_____ Date
ORC:	_____ Name	_____ Signature	_____ Date
APPROVAL:			
Responsible Manager: (or Designee)	_____ Name	_____ Signature	_____ Date

APPENDIX 8.2 - PREVENTIVE MAINTENANCE WORK PACKAGE FORMAT

PM WP CONT. _____

Page X of X

REV _____

SCOPE

Applicable Vendor Manuals:

Craft /Hrs:

Parts/Special Equipment Required:

Instructions:

Precaution & Limitations:

Prerequisites (including remedial
actions):

SAMPLE

Task Steps:

PMT & Data Disposition

APPENDIX 8.2 - PREVENTIVE MAINTENANCE WORK PACKAGE FORMAT

Formatting Instructions

Planner

- [1] Enter the PMWP CONTROL #, Page # and REV# in header of all PM WP pages.

The PMWP control number can be obtained from the PM Coordinator.

- [2] Define the scope.
- [3] Enter applicable Vendor Manuals
- [4] Enter the Craft and estimated scheduled hours (based on craft input) for each Craft.
- [5] List parts or special equipment that is needed to support performance of the PMWP. **IF** a BOM/CBOM is needed, then refer to Chapter 4, Appendix 4.5.
- [6] Develop Precautions and Limitations that apply to the PMWP as follows:

- [A] Inform the performer of specific requirements and personal protective equipment (PPE) for the requested work and hazardous conditions and its potential effects in the precautions and limitations section.

Precautions alert document performers to required actions and conditions that represent potential hazards to personnel of possible damage to equipment, or that establish abnormal conditions. Limitations define boundaries that are **NOT** to be exceeded.

- [7] Develop Prerequisites that apply to the PMWP.
Consider the following in preparing prerequisite statements:

- The safety of personnel, the general public, and the environment
- The protection of equipment and material
- Inadvertent, incorrect or omitted actions that could cause system operation, shutdown or could result in an OSR/TSR violation
- Limitations identified in approved vendor information and design documents
- Unusual alarms that could occur or are expected to occur as a result of the performance of work
- Actions that could result in automatic shutdown of any engineered safety features
- The reduction of personnel or environmental exposure to radiation, contamination, electrical shocks, dangerous chemicals, fire hazards, confined spaces, and moving or rotating equipment
- Specific training or qualification requirements specific to the WP.
- Performance of a Pre-Evolution Briefing (PEB) or Job Task Briefing (JTB) as required by the Conduct of Operations (COOP) Manual.
- Review of the applicable MSDS sheets.
- BOM/CBOM/PBORF inventory and material verification.
- Any preparatory field activities that are required to be completed before proceeding with the specific task instructions.
- Verifying the operability of systems or components before removal from service, for safety items addressed in AB Documents.

- Confirming the correct system lineup.
- Enter applicable remedial actions

[8] Develop task steps that provide:

- Clearly understood text
- Appropriate level of detail
- Concise instruction steps in a logical sequence using Skill-of-Craft methodology, as required.
- Coordination of multiple actions

[9] Develop specific task steps required to complete the requested work with input from: (as appropriate)

- Maintenance
- Engineering
- Safety SMEs
- Quality
- Metrology Laboratory
- Other organizations required by the WP.

[10] Develop task steps, based on skill-of-the-craft, identified hazards, and task complexity, and include:

[A] Specific interim and final witness, inspection, or verification points, as identified by Engineering, Safety, or Quality.

NOTE: *Check-off spaces **Should** be used instead of signatures for all work steps that do not require witness, inspection, verification points, or data collection.*

[B] Signatures are required for steps needing inspection, verification, such as witness points and verification of activities, or data collection.

[C] Identification of steps that could initiate an equipment shutdown or transient or the initiation or interruption of any process action.

[D] Identification of steps that inform the operations personnel of expected alarms or equipment operations.

[E] Specific radiological control hold points, as identified by Radiological Safety.

[F] Signature by SM or work authorizing authority authorizing activities which are sited or credited in AB documents.

PMT & Data Disposition

Engineering, RM, Maintenance, Planner

[11] Develop PMT requirements, and provide the following:

- Purpose describing the intent of the PMT
- Precautions and limitations specific to the PMT

- Prerequisites specific to the PMT
- PMT task instructions specific to the PMT
- PMT acceptance criteria and verification

Planner

- [12] Develop step for RM to compare the work accomplished with the PMT or inspection performed to determine that all work is acceptable prior to returning the equipment or system to normal service per COOP, if required.
- [13] Attach the PMWP Cover Sheet and obtain Concurrence and Approval Signatures per Section 3.2.

APPENDIX 8.3 - PREVENTIVE MAINTENANCE CHANGE REQUEST

PREVENTIVE MAINTENANCE CHANGE REQUEST (PMCR)

1. Description:

PM Control No. _____ Current PM Rev.: _____

EM/PM No.: _____

PM Work Order _____

2. EM/PM Information:

Equipment Name: _____ Manufacturer: _____

Description: _____

Serial # _____ Model # _____

Old EM/PM # _____ Priority Code _____

RFP Property # _____

Ops Area _____ Bldg. _____ Floor _____ Room _____ Col. _____

3. Reason for Request:

4. Justification for Change:

Requested by: _____ / _____
Print Name/Ext./Bldg. _____ Signature _____ Date _____

5. Request: Approved _____ Disapproved: _____ WBS/Charge No.: _____ (Required)

Reasons if disapproved:

Responsible Supervisor: _____ / _____ / _____
Print Name/Ext./Page _____ Signature _____ Date _____

6. Disposition By:

PMCR No. _____ Pen/Ink _____ Revision _____ Other _____ Copy to Originator _____

Disposition By: _____ / _____ / _____
Print Name/Ext./Page _____ Signature _____ Date _____

APPENDIX 8.3 - PREVENTIVE MAINTENANCE CHANGE REQUEST

Instructions for Completing PMCR

The Initiator completes Blocks 1 and 2 and enters the reason for the request in Block 3. He/she should be as specific as possible.

Enter the justification for the change in Block 4. Be as specific as possible (refer to definitions for PM cancellations and PM deferrals).

Submit the PMCR to the RM for disposition.

NOTE: *RM accepts responsibility for all consequences resulting from PMCRs approved by their designees.*

RM

Approve or disapprove the PMCR by checking the appropriate box in Block 5. If the request is disapproved, state reason for disapproval in the space provided.

Enter the Work Breakdown Structure (WBS)/Charge Number in the space provided.

Submit the PMCR to PM Coordinator for disposition.

PM Coordinator

Process PMCR as follows:

- Assign a PMCR Number and annotate it in Block 6.
- Forward PMCR to planning or Equipment Maintenance/Preventive Maintenance (EM/PM) Administrator as applicable.

Planner

Changes to PM WP as follows:

- Obtain the original PM WP from Document Control.
- Revise the PM WP as required, and route for concurrence and approval per Section 3.2.
- **IF** pen and ink change, **THEN** make changes to original (change bars, PMCR#, initial and date in left margin.) Annotate PMCR# as P&I with date on PMWP cover sheet.
- Transmit the completed PMCR and original pages that were replaced to Document Control to be placed in the PMWP history file.
- Send copy of PMCR to PM Coordinator for filing.

EM/PM Administrator

Changes to MMS database (only) as follows:

- Assign PMCR#.
- Update MMS Database.
- Complete section 6 of PMCR.
- Forward copy of original to initiator and retain original in file.

This page intentionally left blank.

CHAPTER 9 - MINOR MAINTENANCE

1.0 PURPOSE

The purpose of this chapter is to provide the requirements for the conduct of performing minor maintenance.

2.0 DISCUSSION

Minor maintenance is an accepted approach to performing maintenance, which is defined as minor and routine in nature, in a more efficient manner without compromising safety. Minor maintenance activities will still require the ISMS approach, but in a graded and tailored manner. This chapter describes the process to use for the determination and performance of minor maintenance activities.

3.0 INSTRUCTIONS

3.1 Minor Maintenance Determination

The Minor Maintenance Work Activity Description, Appendix 9.1, provides a categorization of typical Minor Maintenance activities. The trend codes listed in Appendix 9.1 correspond to the Minor Maintenance Hazard Analysis Matrix in Appendix 9.2, which aids the worker/supervisor in evaluating the job hazards. If the Minor Maintenance activity is not listed in Appendix 9.1, then a JHA **SHALL** be performed in accordance with Chapter 3.

NOTE: *WP's for troubleshooting and reworking fire, security alarm, and radio systems are proven workable and necessary and are considered Minor Maintenance.*

RM

If an Engineering Support Process (ESP) package, as defined in I-V57-COEM-DES-210, *Design Process Requirements*, meets all of the criteria for Minor Maintenance then the RM has the authority to authorize the work under Minor Maintenance. The RM is responsible for assuring that the WP identifies all required documentation from the ESP.

All Site work involves inherent safety hazards which must be individually evaluated and engineering and administrative controls/barriers placed to protect the workers from identified hazards. Crafts' manager/supervisor and the craft personnel who will execute work must jointly agree work is safe to carry out using the Minor Maintenance Hazard Analysis Matrix (Appendix 9.2) or JHA performed per Chapter 3, and associated permits.

3.2 Minor Maintenance Tracking

Minor Maintenance is tracked using the following elements, as appropriate:

Each minor maintenance sub-category, as determined by the Responsible Manager, will be assigned a Work Control Number (WCN). This WCN will be entered into the WCF database and **SHALL** remain open for a period not to exceed one fiscal year.

The Responsible Manager determines what is defined as a minor maintenance sub-category in his/her facility, for tracking purposes. An example might be to issue a minor maintenance WCN for each type of craft.

3.3 Work Instructions

All Minor Maintenance activities will require an adequate assessment of hazards and controls. Appendix 9.2 provides a Hazard Identification Matrix and JHA Worksheet with the corresponding work activity description listed in Appendix 9.1 to aid supervisors and workers in identifying the applicable hazards and controls.

Appendix 9.3 contains the Sample Minor Maintenance Documentation Report required for all Minor Maintenance activities. The instructions for completing this report are included in Appendix 9.3.

The Maintenance Manager **SHALL** review training requirements for those hazards identified in Appendix 9.2 that indicate a training requirement. Table 1 of the TUM can be referenced for most of the training requirements.

The Job Supervisor **SHALL** perform a JTB discussing job hazards and associated controls with the workers, as defined in COOP, prior to releasing the minor maintenance activity to work.

Upon completion of the minor maintenance activity, a PJR may be required in accordance with the requirements stated in Chapter 11.

APPENDIX 9.1 - MINOR MAINTENANCE WORK ACTIVITY DESCRIPTION

The table below provides the category of activity descriptions for those activities that could be performed via Minor Maintenance as defined in Chapter 2. These activities **may** be performed in radiological areas using Radiological Work Permits (RWPs), as required. Refer to the following Minor Maintenance Hazard Analysis Matrix (Appendix 9.2) for assistance in identifying hazards and controls, as related to the "Trend Codes".

TREND CODE	ACTIVITY DESCRIPTION
R01	Re-lamping - Replacement of lamps; panel board enunciator lamps (as long as panel doesn't have to be taken out of service); visual inspection, cleaning, and re-lamping of panel board indicators.
R02	Facility Rework - Rework/replacement of doors, windows, walls, ceiling/floor covering, steps, locks, office partitions, etc. (Pre-survey for asbestos/lead in materials & coatings.)
R03	Painting - General upkeep painting of equipment, offices and buildings. Painting of crosswalks and other similar markings.
R04	Restroom Rework - Rework/replacement of all restroom fixtures or plumbing (or unplug/clean out of drains), excluding backflow preventors
R05	Potable Water Filter Maintenance - Rework/replacement of filter assemblies and periodic replacement of filter cartridges (e.g., on drinking fountains, eye wash stations).
R06	Freeze Protection Inspection/Rework - Perform inspections to verify operation, TS&R of hardwired heat trace and portable heaters.
R07	TS&R Non-safety class HVAC - Inspection, cleaning, troubleshooting and minor rework (must be equivalent item material) of HVAC units. Replacement of NON-HEPA air filters and inspections.
R08	Barricades, Placards, Signs and Labels - Inspections, fabrication and placement of barricades, placards, signs and labels.
R09	Instrument Tags - Fabricate and install instrument, valve, or instrument valve tags. (No breach of system.)
R10	Troubleshooting & Rework (TS&R) of System/Equipment Problems - Troubleshooting and Rework of system/equipment problems to determine cause of malfunction and performing rework necessary to return system/equipment to service. TS&R of energized circuits shall follow the requirements of HSP 15.00.
R11	Control Panels (Mechanical & Electrical) - Replace missing panel covers, screws, or handles on mechanical/electrical control panels.
R12	Equipment Lube Levels - Verification of equipment lubrication reservoir levels and addition of lubricant as required.
R13	Equipment Inspection/Adjustments - Visual inspection, cleaning, packing adjustment, thermographic checks, vibration checks, etc.
R14	Security Gate/Fence Maintenance - Inspection, Cleaning, adjustment, and minor rework of security gate operating equipment and barrier arms. (Must be equivalent item material; if digging is required, use excavation permit/soil disturbance).
R15	Scaffold Assemble/Disassemble - Installation and removal of scaffolding. Includes storage relocation activities.
R16	Engineering Investigation Support - Support for engineering investigations limited to equipment access and taking of measurements or determine as-built condition, not requiring interruption of operations or disassembly of equipment. <u>No equipment configuration changes or adjustments.</u>

APPENDIX 9.1 - MINOR MAINTENANCE WORK ACTIVITY DESCRIPTION

TREND CODE	ACTIVITY DESCRIPTION
R17	Operations Support - Support for initial inspections, walkdowns, pre-approved operating procedure activities, as-built activity, verifying the operation/function/calibration of instruments or equipment, rigging activities.
R18	Electrical Circuits - Replacement of light switch or receptacles, ballasts (other than PCBs), TS&R of $\leq 480v$ equipment.
R19	Minor Mechanical Rework - Rework of non-chemical, non contaminated piping systems where a permitted LO/TO is required. Rework of grating, handrails, and ironwork.
R20	Swamp Coolers - Inspection, cleaning, TS&R, and adjustment of swamp coolers (must be equivalent item material).
R21	Shop Fabrication - Fabricate/rework of equipment/systems in shop. Fabrications are permitted for non-safety class equipment and systems.
R22	Replacement of fan belts on SSC Category 3 and 4 systems.
R23	Plant Power Troubleshooting & Rework (TS&R) of System/Equipment Problems - Troubleshooting and Rework of system/equipment problems to determine cause of malfunction and performing rework necessary to return system/equipment to service. TS&R of energized circuits shall follow the requirements of HSP 15.05.

APPENDIX 9.2 - MINOR MAINTENANCE HAZARDS ANALYSIS MATRIX

HAZARDS	P	T	M	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	SUGGESTED CONTROL MEASURES
1 Radiation / Contamination Work Area	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Read and follow RWP.
2 Electrical Hazards		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Only qualified individuals shall perform work. Follow HSP 15.00 or 15.05.
3 Energized Electrical Hazards	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Install LO/TO per HSP 2.08. Follow HSP 15.00. Obtain Operations Manager approval for work on energized electrical equipment.
4 Energized Component / System (Mechanical, Hydraulic or Chemical)	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Install LO/TO per HSP 2.08.
5 PCB Ballasts				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	If building does not have a WGI, contact Environmental for guidance. Dispose of per building WSRIC.
6 Confined Space Entry	X		X										X														Contact H&S. Follow Confined Space Entry Checklist & PPE.
7 Cutting / Welding / Hot Work	X	X	X					X				X	X	X			X	X	X	X	X	X	X	X	X		Contact H&S. Follow Hot Work Checklist & PPE.
8 Flammable / Combustible Materials				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Ensure proper fire protection controls are established. Use appropriate PPE. Review and retain copies of the MSDS's.
9 Fall Hazards Present	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Use approved ladder, scaffolding, lift, or fall protection equipment. HSP 22.02, 22.03 & 22.05
10 Roof Work	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Obtain permission from Shift Manager. Stay on walkways. Stay at least 6 ft from edge of roof.
11 Ladders				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Do not go above second step from the top on step ladders. Maintain a 3 to 4 ratio for extension ladders, and extend them three feet above the landing. Always face ladder when climbing up or down. Do not lean out of ladder frame.
12 Scaffolding		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Do not lean over railing. Only qualified individuals shall erect scaffolding. HSP 22.03.
13 Pressure Hazards		X						X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	Follow HSP 11.01 and 11.03. LO/TO per HSP 2.08.
14 Asbestos Exposure		X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Read and follow approved asbestos procedures. HSP 9.09. Formal planning is required if asbestos abatement is required.
15 Hazardous Materials				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Contact H&S for monitoring and control requirements. Read and understand MSDS. Know location of nearest spill kit.
16 Hazardous Waste Operations		X											X														Use PPE specified by H&S. Dispose of waste per Bldg. WSRIC and NRWOL. HSP 21.03

APPENDIX 9.2 - MINOR MAINTENANCE HAZARDS ANALYSIS MATRIX

HAZARDS	P	T	M	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	SUGGESTED CONTROL MEASURES
17 Beryllium Hazards		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Mandatory to involve H&S in planning process if areas were MM activities are performed may contain Beryllium contamination and expose workers to inhalation hazards.
18 Lead Exposure		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Mandatory to involve H&S in planning process if areas were MM activities are performed may expose workers to inorganic lead.
19 Respiratory Hazards		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Use PPE as specified by H&S & Rad Safety. Ventilate area. HSP 7.03.
20 Aerial Lifts				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Know and understand operation of lift. HSP 22.06.
21 Heavy Equipment		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Know and understand operation of equipment.
22 Hoisting & Rigging Operations		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Only qualified individuals to perform work. HSP 12.02. Critical Lifts require formal planning and cannot be performed as minor maintenance.
23 Process Waste / Steam Systems																X			X	X	X						Look and listen for signs of leaks. LOTO if required.
24 Temperature Extremes				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	During hot weather, be aware of the signs of heat stress or exhaustion. Drink plenty of fluids. During cold weather, dress appropriately and watch for signs of hypothermia. Contact H&S if heat/cold stress monitoring needed.
25 Noise				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Wear hearing protection if in high noise area. HSP 7.06.
26 Poor Lighting				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Use flashlight or temporary lighting, as needed.
27 Vehicle Traffic				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Be aware of surroundings. Use Flag-Person if necessary.
28 Dust				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Contact H&S for an exposure assessment and identification of required controls.
29 Wet / Slippery Surfaces				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Caution employees to be sure of footing. If possible, dry area prior to working.
30 Animals / Insects				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Be cautious and look for snakes, rodents, spiders, and flying insects. Inform employees of possible problems.
31 Adjacent Water Hazard				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Use GFCI receptacles.
32 Uneven Terrain				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Caution employees to watch for areas which could cause sprains and strains. Be sure of footing. Wear substantial foot protection.
33 Pinch Points				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Look for and avoid pinch points. Use caution when tipping or moving heavy objects. Wear leather gloves.
34 Falling Objects				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Be aware of possible falling objects. If required, wear hard-hat.

APPENDIX 9.2 - MINOR MAINTENANCE HAZARDS ANALYSIS MATRIX

	HAZARDS	P	T	M	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	SUGGESTED CONTROL MEASURES
35	Sharp Objects				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Cut away from body. Protect sharp object/edges when not in use. Use knives with caution. Wear leather gloves.
36	Overhead Obstructions				X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	Be aware of possible obstructions. If required, wear hard-hat. HSP 7.07
37	Site Control (Signs / Barricades)				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			Obey all posted signs and barricades. Establish boundary if necessary. HSP 10.01
38	Remote Work Area				X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	Maintain 2-way radio communication.
39	Housekeeping				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Housekeeping shall be maintained as work progresses.

APPENDIX 9.3 - MINOR MAINTENANCE DOCUMENTATION REPORT

WCF Number: _____ Bldg.: _____ Charge #: _____
Job Description (See WCF): _____

Prerequisites (Check all that apply, attach permits or indicate permit number per governing document)

	Yes	No	Permit No./Comments
Confined Space	<input type="checkbox"/>	<input type="checkbox"/>	_____
LO/TO Required	<input type="checkbox"/>	<input type="checkbox"/>	_____
RWP Required	<input type="checkbox"/>	<input type="checkbox"/>	_____
Beryllium Operations Area	<input type="checkbox"/>	<input type="checkbox"/>	_____
Hotwork	<input type="checkbox"/>	<input type="checkbox"/>	_____
Live	<input type="checkbox"/>	<input type="checkbox"/>	_____
Additional Comments:	<input type="checkbox"/>	<input type="checkbox"/>	_____

Notify User: _____ Building: _____

JTB Performed: ☐

Work authorized by Responsible Manager or Designee to perform maintenance.

RM: _____ Date: _____
or Designee

Work Performance

Record Work Done: _____

PMT Requirements/Operational Check

PMT/Inspection Performed: _____

Job Supervisor Review: _____ Date: _____

APPENDIX 9.3 - MINOR MAINTENANCE DOCUMENTATION REPORT

Documentation Report Instructions

The RM **SHALL** enter the Work Control Form (WCF) number, Bldg. and Job Description in the space provided.

Prerequisites Section

The Job Supervisor **SHALL**:

- Check YES or NO in the appropriate check boxes for permits used. If a permit number exists, enter it in the space provided.
- Record any additional comments.
- Notify User prior to starting work. Annotate in the box provided completion of JTB. Obtain approval from RM before releasing work to crafts.

Work Performance Section

Crafts **SHALL** record all work completed in the space provided. Use and attach additional sheets, if required, to record completed work.

PMT Performance/Operational Check Section

The Job Supervisor **SHALL** determine the PMT required and record the PMT results. This field is required for all Minor Maintenance Activities, even if a verification of work was all that was performed. He/she **SHALL** review and sign for satisfactory completion of PMT.

This page intentionally left blank.

CHAPTER 10 - EMERGENCY WORK

1.0 PURPOSE

This chapter describes the requirements for initiating, documenting, and performing Emergency Work. Emergency Work is defined as any work that requires immediate action to prevent serious personal injury, harm to the environment, a breach to security, or a serious loss of property. Emergency Work Processes (EWPs) are not a substitute for emergency response such as fire fighting, but can support emergency response once the emergency is under control and the area stabilized.

2.0 DISCUSSION

From time to time it is necessary to take emergency actions to prevent injury to personnel and equipment, and to protect the public and environment. This does not mean that Priority Level 1 type work should be performed to meet a schedule or mission activity, but for those items that require immediate attention as defined as Priority Level 1 activities. The five functions of the Site's ISMS should be followed when conducting all work to prevent or mitigate any further injury to personnel. This chapter will provide the instructions for documenting and performing emergency work. It is the line manager's responsibility to ensure this work is performed safely.

3.0 INSTRUCTIONS

3.1 Emergency Work Determination

Any person **may** contact the appropriate SM or RM if an emergency situation exists.

The SM, or RM for non-nuclear facilities, **SHALL** determine if the situation requires Emergency Work. If a determination is made that Emergency Work is warranted, then initiate Emergency Work actions per Appendix 10.1.

A WCF is not required prior to initiating Emergency Work.

The RM or SM **SHALL** inform the Shift Superintendent, Engineering, Quality Assurance, and all appropriate safety disciplines, as required, of the initiation of Emergency Work.

He/she **SHALL** categorize and report Emergency Work to the Department of Energy (DOE) in accordance with 1-D97-ADM-16.01, *Occurrence Reporting Process*.

3.2 Performance & Documentation

The performance of the emergency work **SHALL** be in accordance with the fundamentals of the Site's ISMS. If time permits, a JHA **SHALL** be performed, prior to performing any work, in accordance with Chapter 3.

Document all work performed on the Emergency Action Work Log (EAWL), Appendix 10.1.

3.3 Closure

The Job Supervisor **SHALL**:

- Initiate WCF and obtain work control number.
- Ensure work, inspections, engineering dispositions or nonconforming conditions, and testing required by the EAWL are completed and indicated in the WP.
- Notify the RM for proper disposition if outstanding deficiencies are noted during the EAWL closure, which are **not** covered in the original scope of the EAWL,
- Ensure all required documents are properly filled out and contained in the EAWL.
- Complete the Job Supervisor closure section on the EAWL.
- Issue a new WCF in accordance with Chapter 2, for all open deficiencies.
- Ensure all work and testing specified in the EAWL has been completed satisfactorily and documented in the WP as required.

If an NCR applies to the EAWL/WCF, then Engineering **SHALL** perform an operability assessment on components or systems prior to returning to service; verify the following are completed and complete the Engineering closure signature line as applicable:

- Perform a post modification walk down to redline drawings
- Redlines must include all administrative clarifications, minor design changes, and ECR field changes per the SERM
- Deliver redlined interim controlled drawings to Site Design Document Control
- Complete the Engineering closure signature line, as applicable

The Quality Coordinator **SHALL**:

- Ensure that required signatures and documents are included in the EAWL, requiring Quality concurrence
- Verify that a PMT is performed and documented, acceptance criteria is met, and an NCR has been submitted and dispositioned to resolve hardware/testing problems
- Verify the completed EAWL meets the requirements for a quality record, in accordance with 1-V41-RM-001, *Records Management Guidance for Record Sources*.

The RM **SHALL** assure that Quality signs the closure signature line of the EAWL.

He/she **SHALL** review the EAWL to ensure that all required reviews are complete including all required signatures. This also includes the performance of a SES/USQD.

He/she then approves the EAWL closure and signs the closure section of the EAWL. The activity is then closed in the WCF database.

APPENDIX 10.1 - EMERGENCY ACTION WORK LOG & INSTRUCTIONS

**ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE
EMERGENCY ACTION WORK LOG COVER SHEET**

WORK CONTROL NO. _____

TITLE: _____

ATTENDANCE AT EMERGENCY WORK LOCATION:

Based on my signature, I agree that I will be present at the scene of the emergency to provide guidance for resolving the emergency situation safely and that I will provide necessary inspection, witness, or verification points as required to indicate all work was performed in accordance with current standards.

H&S:	Name _____	Signature _____	Date _____
Rad. Protection:	Name _____	Signature _____	Date _____
Engineering:	Name _____	Signature _____	Date _____
Quality:	Name _____	Signature _____	Date _____
Maintenance:	Name _____	Signature _____	Date _____

APPROVED TO WORK AS AN EMERGENCY PRIORITY:

RM/ EAWL Coord.	Name _____	Signature _____	Date _____
--------------------	------------	-----------------	------------

Closure Concurrence:

Based upon my personal review of this work package and inspection of the work site, all of the work and retest is listed in this package and has been satisfactorily completed and there are not any additional testing or maintenance actions required to restore the affected system to service.

Maintenance:	Name _____	Signature _____	Date _____
Engineering:	Name _____	Signature _____	Date _____
Quality:	Name _____	Signature _____	Date _____
ORC: (REVIEW ONLY)	Initials _____	ORC Meeting Number: _____	Date _____

CLOSURE APPROVAL:

RM(Rep):	Name _____	Signature _____	Date _____
----------	------------	-----------------	------------

APPENDIX 10.1 - EMERGENCY ACTION WORK LOG & INSTRUCTIONS

Page ____ of ____

Responsible Management (RM)

- 1.a) Determine whether or not Emergency Work is warranted, if so, record the scope of the Emergency Work below:

RM (Designee): _____ / _____ / _____
Name Signature Date

- b) Obtain authorization to perform emergency work on or near energized electrical equipment per Appendix 1 of HSP 15.00, as required.

_____ / _____ / _____
Name Signature Date

- c) Delegate a supervisor to control the Emergency Work actions (i.e., EAWL Coordinator) and oversee maintaining the Emergency Action Work Log (EAWL).

Name: _____ Title: _____

RM (Designee): _____ / _____ / _____
Name Signature Date

RM, EAWL Coordinator

- d) Indicate below the personnel, including vendors, required to be present during the Emergency Work:

Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____
Name: _____	Title: _____

RM/EAWL Coord.: _____ / _____ / _____
Name Signature Date

APPENDIX 10.1 - EMERGENCY ACTION WORK LOG & INSTRUCTIONS

Page _____ of _____.

EAWL Coordinator

2) Document notifications.

Shift Superintendent	_____ / _____	_____ / _____
Engineering	Name of Person Contacted	Time & Date Contacted
Quality Coordinator	Name of Person Contacted	Time & Date Contacted
Foreman (If Required)	Name of Person Contacted	Time & Date Contacted
FI (If Required)	Name of Person Contacted	Time & Date Contacted
IH & S (If Required)	Name of Person Contacted	Time & Date Contacted
Rad Safety (If Required)	Name of Person Contacted	Time & Date Contacted

EAWL Coordinator

3) Document personnel attending pre-evolution brief below or on pre-evolution brief form per COOP.

Responsible Organization, EAWL Recorder, Engineering

4) Document all emergency actions and repairs, including the locations, times and persons performing the actions. Include sufficient detail to allow this information to stand alone as a work document. This should include items such as conformance to plant and industry standards, reference documents, information about all parts and materials, special equipment, calibration data, etc.

NOTE

USE CHECKLISTS (HOTWORK, WIRE REMOVAL, VALVE/BREAKER LINEUP, ETC) AND PERMITS (RWP, SOIL DISTURBANCE, ETC) WHEN APPROPRIATE.

Actions taken: _____

APPENDIX 10.1 - EMERGENCY ACTION WORK LOG & INSTRUCTIONS

Responsible Organization, EAWL Recorder, Engineering

5) Record all material/parts below for the Emergency Work.

NOTE
ENGINEERING MUST REVIEW AND CONCUR WITH THE USE OF ALL PARTS AND MATERIALS FOR THOSE ACTIVITIES THAT ARE SITED OR CREDITED IN AUTHORIZATION BASIS DOCUMENTS

Item # _____ (Noun) Name _____
Size _____ Material _____
Mfg. Part # _____ Model # _____
Catalog # _____ Heat # _____
Lot # _____ P/O # _____ Qty _____ Unit _____
Vendor Info: _____

Item # _____ (Noun) Name _____
Size _____ Material _____
Mfg. Part # _____ Model # _____
Catalog # _____ Heat # _____
Lot # _____ P/O # _____ Qty _____ Unit _____
Vendor Info: _____

Item # _____ (Noun) Name _____
Size _____ Material _____
Mfg. Part # _____ Model # _____
Catalog # _____ Heat # _____
Lot # _____ P/O # _____ Qty _____ Unit _____
Vendor Info: _____

Item # _____ (Noun) Name _____
Size _____ Material _____
Mfg. Part # _____ Model # _____
Catalog # _____ Heat # _____
Lot # _____ P/O # _____ Qty _____ Unit _____
Vendor Info: _____

Engineer: _____ / _____ / _____
Name Signature Date

Page _____ of _____

6) Record below all PMT conducted, along with time and craft performing PMT.

Engineer: _____
Name Signature Date

- 7) Record below the additional corrective maintenance or PMT beyond the mitigating action of the Emergency Work corrective action.

Engineer: _____ / _____ / _____
Name Signature Date

8) If applicable, complete the System Return-to-Service and Operability Checklist per COOP.

- 9) Additional corrective actions required to complete maintenance/repair covered under the EAWL.
REQUIRED / NOT REQUIRED (Circle One)

EAWL Coord.: _____ / _____ / _____
Name Signature Date

<u>Step #</u>	<u>Description</u>
---------------	--------------------

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. On the left side, there is a vertical margin line, creating a narrow left margin. The paper appears to be from a notebook or a standard ruled document.

This page intentionally left blank.

CHAPTER 11 - POST JOB REVIEWS & FEEDBACK

1.0 PURPOSE

The purpose of this chapter is to provide the requirements for the conduct of performing feedback by the use of:

- Post Job Reviews (PJR)
- Reference Library
- Corrective Action Plan (CAP) Input

2.0 DISCUSSION

This chapter provides an avenue whereby personnel can provide input to help identify strengths and weaknesses in order to improve the processes. Identification and elimination of performance weaknesses through effective PJRs lead to an upward spiral in performance that increases overall safety and health of workers and the public, protection of the environment, while also improving efficiency and mission performance. The feedback obtained from these PJRs is not concerned with right or wrong, but with gaining information to improve the processes under discussion.

Lessons Learned are a good practice or innovative approach that is captured and shared to promote repeat application, or an adverse work practice or experience that is captured and shared to avoid recurrence. To determine if Lessons Learned should be shared, ask if there is the potential for this deficiency, event, adverse condition or safety issue to exist in, or to affect other buildings, operations, activities or organizations. If the answer is "yes", the lessons **Should** be shared.

3.0 INSTRUCTIONS

3.1 Criteria for Conducting PJRs:

The PJR checklist **SHALL** be included in all planned work packages, technical procedures, and engineering design packages to allow the worker to provide feedback at any given opportunity. The following is a list of criteria which will require a formal PJR:

- ASF Screen, score in the "HIGH" category
- When new/special technology or techniques were used
- If the job tasks resulted in a recordable, or other significant incident
- If a worker was injured during the performance of work
- Work defined as Emergency Work in accordance with Chapter 3
- When requested by anyone involved in the performance of work

The Job Supervisor **SHALL** conduct the PJR for the planning and performance of the work. This should be performed with the Work Team when practical. He/she **SHALL** complete the PJR and submit a to the RM. The original PJR Checklist is placed into the original work document file.

The RM **SHALL** review the PJR Checklist and evaluate if any lessons-learned or areas for improvement were identified. If lessons-learned, recurring issues or areas for improvement were identified, then the RM **SHALL** submit this information to the responsible organization's

Lessons Learned Point of Contact for inclusion into the lessons-learned program in accordance with the Site Lessons Learned Generic Implications Requirements Manual.

If the comments identified during the PJR can be corrected immediately, then the RM **SHALL** ensure the comments are corrected in a timely manner and provide feedback back to the work team.

3.2 Reference Library

As this revised version of the IWCP is implemented, a Reference Library will be established by the IWCP Program Manager which will contain a specific subset of all completed IWCP work packages. The goal behind retaining a set of completed work packages is to provide future work planners with examples of work they may not have previously planned or which contain improvements in safety and/or efficiency. By providing the planners with a "place to start", the new IWCP **Should** improve the integration of and efficiency with which work is planned and conducted on Site.

After the work is completed and the work control form is closed out, the RM/planner **Should** evaluate the work package against the following criteria to determine if an electronic and paper copy of the package **Should** be retained in the Reference Library. These criteria include:

- Work, similar to the work just completed is planned to occur in another building or at another location on Site in the near future
- Work, just completed, was accomplished on Site for the first time since July 1995
- Work, conducted in accordance with this work package, was completed in a safer or more efficient manner than similar work previously planned and conducted on Site

All planners will be trained on the use and benefits of the Reference Library. Planners will be expected to search the Reference Library prior to initiating the planning for new work and make use of the example work packages where applicable.

3.3 Corrective Action Program (CAP)

The Corrective Action Program, as defined in 1-MAN-012-SCARM, *Corrective Action Requirements Manual*, establishes the elements and requirements for tracking and correcting deficiencies. As part of the feedback process, the RM **Should** catalog any deficiencies or issues identified through the PJR and/or job closeout process that should be entered and tracked through the CAP. This ensures that new deficiencies are documented and managed through subsequent closure.

Work Document Number: _____ Building _____ Date _____
 Title: _____
 Job Supervisor: _____ Equipment Name: _____

[illegible]

APPENDIX 11.1 - POST JOB REVIEW CHECKLIST & INSTRUCTIONS

Instructions for completing the Post Job Review Checklist

1. Enter the work control number and the date the form was completed.
2. Enter the name of the Job Supervisor who was responsible for the performance of the work. (This person **SHALL** lead the PJR.)
3. Evaluate how well the activity went. Circle the appropriate box, and provide comments to clarify needs identified during the work or to suggest improvements. In general circling a 1 means significant problems were encountered. When the process is excellent it can be beneficial to say why it went so well. This positive feedback may increase the likelihood that the performance will be repeated.

Additional Information to clarify the evaluation

The following section provides some narrative descriptions of what key questions are trying to evaluate.

1. ***Safety Barriers Were Effective*** is intended to capture issues and suggestions related to the adequacy of the safety during the work. The review **Should** consider the adequacy of the safety hazard identification, special safety equipment, safety coordination and support, pre-job briefing, and worker performance during the job.
2. ***System, Component, and Support Were Ready for Work*** is intended to evaluate the physical conditions needed to perform the work. It considers whether the equipment and system being worked on were in a condition where work could be performed as scheduled. This evaluation includes the coordination between planning, operations, maintenance and support organizations to ensure proper configuration and condition of work site equipment.
3. ***Support Coverage Was Adequate*** is intended to evaluate the coordination and cooperation between support organizations and the worker(s) performing the work. It includes having key people available when needed and having cooperation between work groups to accomplish the work.

Unacceptable = Significant delays encountered, key people not available, major conflict between work groups

Marginal = Minor delays encountered, coordination break downs, some conflict between work groups

Good = No delays encountered, good coordination or cooperation, but not both

Excellent = Support ready to work as planned, good coordination and cooperation between work groups

4. ***Environmental Barriers Were Effective*** is intended to capture issues and suggestions related to the adequacy of the environmental controls during the work. The review **Should** consider the adequacy of the environmental hazard identification, special equipment, coordination and support, pre-job briefing, and worker performance during the job.
5. ***Work Document Was Adequate*** is intended to capture issues and suggestions related to the adequacy of the work document. These include evaluating that the work instructions were appropriate and comprehensive, that instructions were clear, drawings and references were

appropriate and comprehensive, tools equipment and processes used to accomplish the work were appropriate, and identifies any contributing factors that helped improve the job performance.

6. **Other (Description)** This section is provided to allow individuals to identify improvement opportunities that do not seem to fit in the other sections. It should also be used to indicate when an occurrence report has been generated as a result of an incident that occurred during performance of the work. Provide additional information in the comment section of the checklist.
7. The **Comment Section** should be used to:
- Provide clarifying information about the PJR
 - Provide specific suggestions to improve work performance in the future

Some example comments are provided below:

- # 1 The lifting straps issued for the work were found to be damaged during the pre-job preparation. The damaged straps were returned to the tool room for disposal. Good straps were drawn from stock. We need to ensure that straps are inspected prior to being issued by the tool room.
- #9 The Radiation Safety coverage was not available for the first two hours of the scheduled work. They were called over to support an unplanned shipment of casks. We need to follow the plan of the day or let people know when conditions change. We could have completed another work order while we waited if we had known this was going to happen.
- #11 This work document was well prepared. The preparer walked the job down with the team prior to preparing the document. During the walk down we considered several alternatives and determined that by removing some grating we could save more than 5 hours in the pump replacement. This worked great!

CHAPTER 12 - GLOSSARY

1.0 PURPOSE

This chapter provides a list of terms used throughout the IWCP with their respective definitions. If a definition is not included in this Glossary, the definitions in the RFP Dictionary or SERM apply.

2.0 TERMS & DEFINITIONS

Activity. A defined scope of work for designation of controls to maintain an adequate margin of safety against the hazards or other uncertainty presented by the work.

Administrative Controls. Provisions relating to organization and management, procedures, recordkeeping, assessment, and reporting necessary to ensure the safe operation of a facility.

Administrative Request. A request for administrative support of maintenance, e.g., Standard Work Package, Preventive Maintenance Work Package.

As Low As Reasonably Achievable (ALARA). The approach to Radiation Safety to manage and control exposures (both individual and collective) to the work force and to the general public to as low as is reasonable, taking into account social, technical, economic, practical and public considerations. As used in the RadCon manual and 10 CFR 835, ALARA is not a dose limit but a process that has the objective of attaining doses as far below the applicable limits of 10 CFR 835 as is reasonably achievable.

Auditable Safety Analysis (ASA). A defensible safety analysis (similar to a SAR but with much reduced content and requirements) which is developed for a radiological facility. An auditable safety analysis:

- Provides systematic identification of hazards within a given DOE operation
- Describes and analyzes the adequacy of measures taken to eliminate, control or mitigate identified hazards

Authorization. The granting of approval to operate a facility or process in accordance with the terms and conditions of a set of authorization controls. A regulator or legal authority provides authorization.

Basis. Summary statement of the reason for the administrative and engineered controls, the administrative control program and the associated surveillance requirements. The Basis relates the credited assumptions made in the accident analysis to the requirements for safe operation.

Bill of Material (BOM). Form that contains a technical description for items accomplishing maintenance or modification work.

Breach of Primary Radiological Containment. Actions which open or otherwise breach, a pipe, vessel, or other containment device allowing the uncontrolled release or potential release, of contaminated or potentially contaminated material to the surrounding environment.

Caution Statement. A statement to alert the user to possible equipment damage. The caution precedes the step or steps to which it applies. Cautions do not contain action steps. For emphasis, the caution is enclosed in a box and labeled **CAUTION**.

Construction. For purposes of this document, the term referring to D&D, new or modified construction, and remediation work performed on Site.

Construction Health and Safety Plan. A written document prepared by the subcontractor that includes; the subcontractor's proposal for implementing Site **construction** health and safety requirements, identification of subcontractor supervisor personnel, competent persons and qualifications responsible for health and safety performance, and proposed construction site health and safety orientation.

Construction Specifications Institute. Master system of specification guides developed by industry groups to be used for the establishment of contractual relations between parties involved in a construction project.

Contractor's Technical Representative. In accordance with the K-H Procurement System, CTRs act as the authorized representatives of the Company in performing such functions as approval of drawings, testing, approval of samples, inspection and monitoring of the subcontractor's work, and other functions of a technical nature not involving a change in work, prices, delivery, or terms and conditions of the subcontract. CTRs vary by project and are necessary for all service type requirements.

Consolidated Bill of Material (CBOM). Form that consolidates the technical description and references of the applicable procurement specifications for items required to accomplish maintenance or modification work.

Corrective Maintenance. The repair or rework of failed or malfunctioning equipment, system, or facilities to restore the intended function or design condition. This maintenance does not result in a significant extension of the expected useful life. (DOE 4330.4B, Attachment 1)

Criticality Safety Hardware. Hardware and fixtures which serve the specific purpose of providing separation and isolation of fissile material to ensure Nuclear Material Safety Limits (NMSL) and nuclear Criticality Safety Operating Limits (CSOL) are preserved.

Cross-Table Review. A documented, critical review performed by peers who are independent of the work being reviewed. Each peer's independence from the work being reviewed means that the peer:

- Was not involved as a participant, supervisor, technical reviewer, or advisor in the work being reviewed.
- Has sufficient freedom from budget and line-management considerations of the development organization to ensure that the work is reviewed impartially.

A Cross-Table Review is an in-depth critique of assumptions or bounding conditions, calculations, alternate interpretations, methodology, and acceptance criteria employed, and of the conclusions drawn in the original work. The goal is to assess the adequacy of the original work, not to redesign it if it is deemed adequate. The Cross-Table Review is a team effort, with the peer review group and the members of the original planning team acting together, rather than submitting comments between groups. This method embraces the opportunity for in-depth discussion of questions and ideas.

Davis-Bacon Covered Work. Work that is covered under the provisions of the Davis-Bacon Act, and is considered to be construction type work and cannot be assigned to contractor or subcontractor's maintenance forces.

Decontamination and Decommissioning. Encompasses an overall process from planning to demolition and cleanup - includes deactivation, decommissioning, dismantlement, and demolition

PM Delinquency Report. A report generated by the Maintenance Management System identifying PM orders not performed within an allowed time.

Engineering Services.

- **Preliminary Design (Title I)** Preliminary design that extends the Conceptual Design and the Design Criteria to determine the requirements and criteria which will govern the Title II design. Tasks include preparation of preliminary planning and engineering studies, preliminary drawings and outline specification, life-cycle cost analysis, preliminary cost estimates, and scheduling for project completion. Preliminary design provides identification of long lead procurement items and analysis of risks associated with continued project development.
- **Definitive Design (Title II)** Definitive design that continues the development of the project based on the approved Title I design. Definitive design includes any revisions required of the Title I effort; preparation of final working drawings, specification, bidding documents, cost estimates, and coordination with all parties which might affect the project; development of firm construction and procurement schedules; and assistance in analyzing proposals or bids.
- **Construction Services (Title III)** Service activities required to ensure that the project is constructed in accordance with approved drawings and specifications and that the quality of materials and workmanship is consistent with the requirements of a project.

Design-Bid-Build Method. Separate subcontracts are issued for the design and the construction.

Design/Build Method. A single subcontract is issued for both the design and construction.

Design Criteria. Translates the requirements from the URD into design parameters. It contains technical data and other project information developed during project identification and planning, conceptual design, and preliminary design phases.

Design Intent. Purpose for which a plan of execution for construction, maintenance, modification, or repair activities were formulated. (i.e., fire protection, ventilation supply, heating, etc.)

EM/PM Administrator. The individual assigned to oversee the Maintenance Management System.

Environmental Degradation. Conditions adverse to the safety of the environment that can impact personnel and public safety within and outside of the Site's boundaries.

Environmental Regulatory Compliance Facilities, Systems, or Hardware. Any facility, systems, or hardware used for containing, monitoring, moving, processing, or analyzing environmentally significant items or events including but not limited to:

- Air monitoring stations.
- Secondary containment of liquids.
- Waste management systems, primary and ancillary.
- Tanks.
- Data monitoring or analysis equipment.
- Significant controlling software.

Equivalent Item. A part or component that is an equivalent to the item being replaced as established by the performance of an Item Equivalency Determination.

Facility. Any equipment, structure, system, process, or activity that fulfills a specific purpose. The definition of facility most often refers to buildings and other structures, their functional systems and equipment, and other fixed systems and equipment installed therein to delineate a facility. However, specific operations and processes independent of buildings or other structures (e.g., waste retrieval and processing, waste burial, remediation, groundwater or soil decontamination, decommissioning) are also encompassed by this definition. For the purpose of this procedure, the facility designation is expanded to include any formally designated building, site, structure, area, or project (such as Building 371, PADs, Tents, or Ponds) where a formal work authorization must be granted prior to conducting work.

Graded Approach. A process by which the level of analysis, documentation, and actions necessary to comply with a requirement are commensurate with:

- Relative importance to safety, environment, safeguards, and security
- Magnitude of any hazard involved
- Life-cycle stage of the facility or activity
- Programmatic mission of the facility or activity
- Particular characteristics of the facility or activity
- Other relevant factor, as appropriate
- The Quality Assurance (QA) Rule (10 CFR 830.120) and DOE Order 5700.6C are applied to the Site through the use of a graded approach. In order to ensure the most efficient use of resources, a graded approach is used to determine the rigor with which the QA requirements are applied to a specific facility or activity. This approach provides the flexibility to implement the programs in a way that best suits the facility or activity while maintaining full compliance with the QA Rule and DOE Order 5700.6C.

Hazard. A source of danger (i.e., material, energy source or operation) with the potential to cause illness, injury, or death to personnel or damage to a facility or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation).

Hazard Analysis. The determination of material, system, process, and facility characteristics that can produce undesirable consequences, followed by the assessment of hazardous situations associated with a process or activity. Largely qualitative techniques are used to pinpoint weaknesses in design or operation of the facility that could lead to accidents. (e.g., JHA, ALARA Review, etc.).

Hazard Categories. The consequences of unmitigated releases of radioactive and/or hazardous material are evaluated and classified by the following nuclear hazard categories:

- Hazard Category 1: The hazard analysis shows the potential for significant offsite consequences.
- Hazard Category 2: The hazard analysis shows the potential for significant onsite consequences.

- Hazard Category 3: The hazard analysis shows the potential for only significant localized consequences.

Hazardous Material. Any solid, liquid, or gaseous material that is toxic, explosive, flammable, corrosive, or otherwise physically or biologically threatening to health. Oil is excluded from this definition. Solid, liquid, or gaseous substances in quantities that either alone, when combined with another substance through a credible mechanism, or when coming in contact with an available energy source, are determined to be capable of posing an unacceptable risk to the environment or to the health and safety of the workers or the public. This includes radiological, non-radiological and mixed materials that are toxic, explosive, flammable, corrosive, or otherwise physically or biologically health threatening.

Health and Safety Plan (HASP). A safety analysis for facilities or operations involving hazardous waste based on the minimum requirements of 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*.

Hold Point. A step in the work package where work is not allowed to proceed until the step is complete and signed, e.g., inspection point, verification point.

I-Spec. A unique identifying number from the Site's PEMS database assigned by Engineering which identifies the acceptance criteria for procured equipment or materials.

Independent/Peer Review. A critical review performed by peers who are independent of the work being reviewed. Otherwise known as a Cross-Table Review.

Inspection. Examination or measurement of an activity to verify conformance to specific requirements.

Integrating Management Contract (IMC). A contract arrangement between the Department of Energy and a first tier [i.e., prime contractor] that serves to integrate services from lower tier contractors [e.g., second, third, and lower tier companies] for the operation, maintenance, and closure activities at the Site.

Integrating Management Contractor. The IMC prime contractor to DOE in charge of oversight of Principal Subcontractor Companies at the Site. The Integrating Management Contractor provides direction, requirements, integration, and oversight of lower tier contractors responsible for operation, maintenance, and closure activities at the Site. The current integrating management contractor is Kaiser-Hill Company, LLC.

Integrated Safety Management (ISM). ISM is the systematic integration of safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of environment, safety and health into work planning and execution. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment.

Job Hazard Analysis (JHA). A documented process whereby the steps for a work activity are analyzed for hazards and control measures prior to the work being performed.

Like for Like. A part or component which is the same as the part being replaced.

Limited Use. The terminology used for equipment, components, or systems which are reserved for use in an emergency or other exceptional condition as specified by the MM.

Maintenance Management System (MMS). - A sitewide computerized system for the tracking of Preventive Maintenance which contains the equipment, plan, work order, and history information for specific components.

Modification. Any change, addition, or alteration to a Structure, System, or Component (SSC) that alters the design basis (e.g. flow rates, seismic strengths, delta pressures, control parameters, program sequence, load carrying capacity, response time, fire suppression/detection capabilities, shielding, criticality spacing, corrosion resistance). Use of like for like or equivalent item is not a modification.

Nonconformance Report (NCR). A report used to document the identification, disposition, and correction of nonconforming items or activities.

Non-nuclear Authorization Basis. Those aspects of the conduct of the activity and associated operations relied upon by contractor management to authorize operation. These aspects are considered important to conducting the activity safely. The non-nuclear authorization basis is described in documents such as the Health and Safety Plan (HASP), Auditable Safety Analysis (ASA), Integrated Work Control Program (IWCP), Radiological Work Permit (RWP), or other work control documents depending on the inventories of hazardous materials or hazards estimated to be inherent in the activity.

Notes. A statement that provides important supplemental information. Notes can pertain to action steps. When associated with action steps, the note precedes the step or steps to which it applies. Notes do not contain action steps.

Nuclear Activity. See the following definition for Nuclear Facility. Note that definition of Nuclear Facility, as provided by 10 CFR 830.3 includes *"those activities or operations that involve radioactive and/or fissionable materials in such form and quantity that a nuclear hazard potentially exists to the employees or the general public"*.

Nuclear Facility. Non-reactor nuclear facility means those activities or operations that involve radioactive and/or fissionable materials in such form and quantity that a nuclear hazard potentially exists to the employees or the general public. Incidental use and generating of radioactive materials in facility operation (e.g., check and calibration sources, use of radioactive sources in research and experimental and analytical laboratory activities, electron microscopes, and X-ray machines) would not ordinarily require the facility to be included in this definition.

Nuclear Facility Authorization Basis. Those aspects of the hazard category 2 and 3 nuclear facility design basis and operational requirements relied upon by DOE to authorize operation. These aspects are considered to important to the safety of the facility operations. The authorization basis is described in documents such as the facility Safety Analysis Report and other safety analyses, hazard classification documents and the Technical Safety Requirements, DOE-issued safety evaluation reports, and facility-specific commitments made in order to comply with DOE rules, Orders, or policies.

Operational. The terminology used for a system or component that is capable of performing its intended function in the required manner upon demand.

Out of Commission (OOC). The terminology used for equipment, components, or systems that are removed from service and with no future use or mission defined. OOC equipment, components, and systems **may** be retired in place.

Out of Service (OOS). The terminology used for equipment, components, and systems that are not available for operation for any given reason, and are intended to be returned to service. (RFP Dictionary,

Planning Team. The multi-disciplined team assigned the responsibility of planning the work for both the Medium and High Planning Levels. This Team can include engineers, planners, managers, crafts, SMEs and safety and health professionals.

PM. Preventive Maintenance Work Order.

PMWP. Preventive Maintenance Work Package.

PM Coordinator. The individual/individuals assigned by the company to administrate that companies preventive maintenance program.

PM Cancellation. A canceled PMO **SHALL** be removed from the tracking database via PMCR. The criteria for PMO Cancellations are:

- The equipment is Out of Commission (OOC)
or
- The performance of the PMO does not add value as determined and documented by management.

PMO Deferral. A deferred PMO **SHALL** remain on the tracking data base. A deferral is considered a short term rescheduling and is issued for a period not to exceed three times periodicity or one year whichever is less. It **may** be renewed one time only, on a case by case basis. The criterion for a PMO Deferral is:

- A PMCR from the RM describing the required time period and reason for the deferral.
or
- Out of Service (OOS)

Post-maintenance Testing (PMT). Action taken to verify that equipment or components are operating correctly and fulfilling their design functions when returned to service following the completion of work.

Preventive maintenance. Includes periodic and planned maintenance actions taken to maintain a piece of equipment within design operating conditions and extend its life and is performed prior to equipment failure or to prevent equipment failure. This includes technical specifications surveillance, in-service inspections, and other regulatory forms of preventive maintenance.

Project Management Plan (PMP) / Project Execution Plan (PEP). A PMP and PEP are used synonymously throughout this manual. PMPs/PEPs define the project charter, work plan, and requirements implementation. The charter includes the project vision, mission, critical success factors, and performance measures. The work plan includes the Work Breakdown Structure (WBS), responsibility assignment, scope of work, estimated schedule, estimated cost for the project, and project controls.

Project Team. Participants on a project including the Program Manager, Project Manager, Project Engineer, Building/User Representatives, Contractor Representative, Construction Engineer, appropriate subject matter expert(s), and other personnel assigned to the project.

Public. All individuals outside the DOE Site boundary.

Quality Assurance Plan. A formal document describing necessary quality assurance, quality control, and other technical activities that are implemented to ensure that the results of the work performed will satisfy the stated performance criteria.

Remediation. Activities conducted to reduce potential risks to people and/or harm to the environment from radioactive and/or hazardous substance contamination.

Repair. The process of restoring a nonconforming characteristic to a condition such that the capability of an item to function reliably and safely is unimpaired, even though that item still does not conform to the original requirement.

Responsible Manager (RM). The manager directly responsible and accountable for the development, implementation, and performance of the work (e.g., Facility Manager, Building Manager, Operations Manager, Maintenance Manager, and/or Project Manager)

Responsible Organization. The organization that is assigned to have the primary or lead responsibility for the resolution of a deficiency or completion of a required action on a Work Request or Administrative Request. The Responsible Organization can be any site organization, including that of the originating RM.

Rework. The process by which an item is made to conform to the original requirements by completion or correction.

Safety Basis. The combination of information relating to the control of hazards at a facility (including design, engineering analyses, and administrative controls) upon which DOE depends for its conclusion that activities at the facility can be conducted safely.

Scope. Statement specifying the performance boundaries of the work activity to be executed. (e.g., remove/install piping, run conduit, install fire control panel etc.)

Scope of Work. Refers to the project or activity baseline that defines technical objectives and general approaches in terms of design, execution, and performance requirements, criteria, and characteristics derived from what the project is intended to accomplish.

Skill-of-the-Worker. Those skills that a craftsman/technician should be able to perform commensurate with his/her skill training without specific task instructions (i.e., instruct craft to install hot water heater element without providing detailed instructions).

Source Document. Documents or references that support, initiate, or cross-reference the Work Control Form (WCF). These documents may include:

- Requirement documents (such as DOE orders, Engineering specifications, or administrative or technical procedures)
- Deficiency corrective action documents (such as audits, self-assessments, NCR's, safety concerns, or Occurrence Report actions)

Standard Work Package (SWP). A pre-approved Work Package prepared for a repetitive maintenance action and authorized to be used on a recurring basis with RM or SM approval.

Statement of Work (SOW). Describes the essential and technical requirements for items, materials, or services to be provided.

Technical Procedure. The SDRM defines activities requiring technical procedures to include protection of the worker, the public, equipment, or the environment during any operation. The use of a technical procedure significantly reduces risk for such activities as:

- Operations involving radioactive or hazardous materials (for example, criticality hazards, explosives, flammable liquids, carcinogens)
- Operations with potential for serious injury (for example, high voltage and/or stored energy sources, pneumatic systems, hydraulic systems, use of accelerators)
- Operations with potential for exposing employees to adverse environmental conditions (for example, noise or heat)
- Emergency operations
- Tasks involving Vital Safety Systems (VSS'), Structures, Systems, or Components (SSCs), and safety support systems
- Tasks involving Operational Safety Requirements (OSRs), Technical Safety Requirements (TSRs), or the Authorization Basis.

User Requirement Document (URD). Translates the needs and requirements for the project into a baseline document in which the physical requirements, safety requirements, national codes and standards, Site Engineering Standards, and DOE orders are identified and agreed to by the appropriate parties. These will be the requirements that must be met and complied with and will provide the basis for monitoring and verifying compliance as the work progresses.

Verification Point. A step in the work package that ensures a condition conforms to the specified requirements and the process cannot proceed without first completing this step. (i.e. verification of LO/TO).

Warning Statement. A statement to alert the user to possible personal injury or environmental damage. The warning precedes the step or steps to which it applies. Warnings do not contain action steps. For emphasis, a warning is enclosed in a box and labeled **WARNING**.

Witness Point. A step in the work package that requires someone other than the person performing the task to actually watch the task take place.

Work. Any project or activity that has the potential to produce damage to the environment, injury to the public or worker in the event of an accident or process upset.

Work Authorization Process. The planning and preparation for the conduct of an activity, which result in a documented safety basis and a verifiable ready to proceed status.

WCF Database. A sitewide computerized system for tracking the status of a Work Request or Administrative Request initiated on the Work Control Form (WCF) (also see Maintenance Management System (MMS)).

Work Control Documents. Those documents that are used directly to perform tasks in preparation for or in the performance of an activity, such as IWCP work packages, technical procedures, and Engineering Design Packages (EDPs).

Work Control Form (WCF). The form utilized to initiate, process, and assign a Work Request or Administrative Request to the Responsible Organization.

Work Control Form (WCF) Originator. Any RFETS employee or onsite subcontractor who initiates an Administrative Request, or observes or becomes aware of a deficiency and initiates a Work Request using the WCF.

Work Control Number (WCN). The unique computer-generated number, or authorization charge number, obtained from the Work Control Database and assigned to a specific WCF for purposes of tracking work governed by the IWCP.

Work Request. A request for new construction, modifications, or improvements to equipment, facilities, or plant grounds.

REFERENCES

Acquisition Procedure for Requisitioning Commodities and Services, 1-W36-APR-111
Conduct of Operations Manual
Construction Close-out, 4-17C-COEM-CMG-417
Construction Specification Institute
Davis-Bacon Process, 1-90000-ADM-9.05
Hazard Baseline Documentation, DOE-EM-STD-5502-94
Hazard Categorization and Accident Analysis Techniques, DOE-STD-1027-92
Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120
Health and Safety Practices Manual
Independent Review Committee, 1-52000-ADM-02.01
Integrated Safety Management System Manual, 1-MAN-016-ISM
Maintenance Management Program, DOE Order 4330.4B
Non-Routine Waste Origination Log, 1-I34-WO-1103
Nuclear Safety Analysis Reports, DOE Order 5480.23
Nuclear Safety Management, 10 CFR 830.3
Nuclear Safety Manual, 1-MAN-018-NSM
Occupational Radiation Protection, 10 CFR 835
Occurrence Reporting Process, 1-D97-ADM-16.01
Preparation Guide for U.S. DOE Nonreactor Nuclear Facility Safety Analysis Reports, DOE-STD-3009-94
Preparation of Project Management Plan/Work Package, 3-K78-COEM-PMG-323
Project Management System, DOE Order 4700.1
Radiological Control Manual
Records Management Guidance for Records Sources, 1-V41-RM-001
Rocky Flats Dictionary
Safety Evaluation Screen, 1-C10-NSM-04.03
Site Documents Requirements Manual, MAN-001-SDRM
Site Engineering Requirements Manual, MAN-027-SERM
Site Lessons Learned Generic Implications Requirements Manual, 1-MAN-017-LLGI-RM
Site Quality Assurance Program (SQAP)
SSOC Unreviewed Safety Question Process, 3-X97-SSOC-USPQ1
Training Users Manual
Unreviewed Safety Question Determination, 1-C11-NSM-04.05
Weekly Status Report, 4-11C-COEM-CMG-411
Work Breakdown Structure, 3-L01-COEM-PMG-317

ACRONYMS

AB	Authorization Basis
ACE	Activity Control Envelope
AHA	Activity Hazards Assessment
ALARA	As Low As Reasonably Achievable
ASA	Activity Safety Assessment
ASF	Activity Screening Form
BDCF	Baseline Document Change Form
BFO	Basis For Operation
BIO	Basis for Interim Operation
BOM	Bill of Material
CAP	Corrective Action Program
CBOM	Consolidated Bill of Material
CBT	Computer Based Training
CERCLA	Comprehensive Environmental Response Compensation and Recovery Act
COOP	Conduct of Operations Program
CPMS	Construction Project Management System
CSI	Construction Specification Institute
CSOL	Criticality Safety Operating Limit
CTR	Contract Technical Representative
D&D	Decommissioning & Demolition
DCF	Document Change Form
DES-210	1-V51-COEM-DES-210, <i>Design Process Requirements</i>
EAWL	Emergency Action Work Log
ECR	Engineering Change Request
EDP	Engineering Design Package
EM/PM	Equipment Maintenance/Preventive Maintenance
EMT	Emergency Response Technician
EPA	Environmental Protection Agency
EQP	Emergency Work Process
ER	Emergency Response
ESP	Engineering Support Process
EWP	Enhanced Work Planning
FAR	Federal Acquisition Regulation
FMEA	Failure Modes and Effects Analysis
FSA	Facility Safety Assessment
FSS	Facility Safety System
H&S	Health and Safety
HASP	Health and Safety Plan
IHA	Integrated Hazards Assessment
IRC	Operations Review Committee
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
IVD	Interactive Video Disc
IWCP	Integrated Work Control Program
JHA	Job Hazards Analysis
JOA	Justification of Adequacy
JSA	Job Safety Analysis
JTB	Job Task Briefing

K-H	Kaiser Hill Company, LLC
LCO	Limiting Conditions of Operation
MAORF	Material Agreement Order Receiving Form
MAR	Material-at-Risk
MMS	Material Management System
MSDS	Material Safety Data Sheet
NCR	Non-Conformance Report
NEPA	National Environmental Policy Act
NMSL	Nuclear Material Safety Limit
NRWOL	Non-routine Waste Origination Log
NSM	1-MAN-018-NSM, <i>Nuclear Safety Manual</i>
OJT	On the Job Training
ORC	Operations Review Committee
OSHA	Occupational Safety & Health Administration
OSR/TSR	Operational Safety Requirement/Technical Safety Requirement
PAM	Proposed Action Maintenance
PBD	Project Baseline Description
PCE	Program Chief Engineer
PCN	Procedure Change Notice
PE	Project Engineer
PEB	Re-Evolution Briefing
PHA	Preliminary Hazards Analysis
PJR	Post Job Review
PM	Project Manager
PMCR	Preventive Maintenance Change Request
PMO	Preventive Maintenance Work Orders
PMT	Post Maintenance Test
PMWP	Preventive Maintenance Work Package
POD	Plan of the Day
PPE	Personnel Protective Equipment
PRA	Probabilistic Risk Assessment
PW	Procedure Writer
QA	Quality Assurance
QAP	Quality Assurance Plan
R&D	Research & Development
RCRA	Resource Conservation and Recovery Act
RM	Responsible Manager
RWP	Radiological Work Permit
S&M	Surveillances and Maintenance
SAR	Safety Analysis Report
SC	System Category
SCE	Site Chief Engineer
SERM	Site Engineering Requirements Manual
SES	Safety Evaluation Screen
Site	Rocky Flats Environmental Technology Site
SM	Shift Manager
SME	Subject Matter Expert
SMP	Safety Management Program
SNM	Special Nuclear Material
SOW	Statement of Work
SQAP	Site Quality Assurance Program

SSC	System, Structure or Component
SSSC	Safety Significant system or Component
SWP	Standard Work Package
TDA	Training Decision Assistant
TIM	Training Implementation Matrix
TIP	Training Implementation Plans
TO&I	Training Oversight & Integration
TOO	Technical Operations Order
TP	Technical Procedure
TUM	Training Users Manual
UPS	Uninterruptable Power Supply
USQD	Unreviewed Safety Question Determination
VSS	Vital Safety System
WAD	Work Authorization Document
WCD	Work Control Document
WCF	Work Control Form
WCN	Work Control Number
WP	Work Package
WPCL	Work Package Change Log
WPRR	Work Package Review Request